For producers of Sand ed Gravel, Crushed Stone, ement, Lime, Gypsum, and other nonmetallic minerals

DECEMBER 1956

PIT and QUARRY

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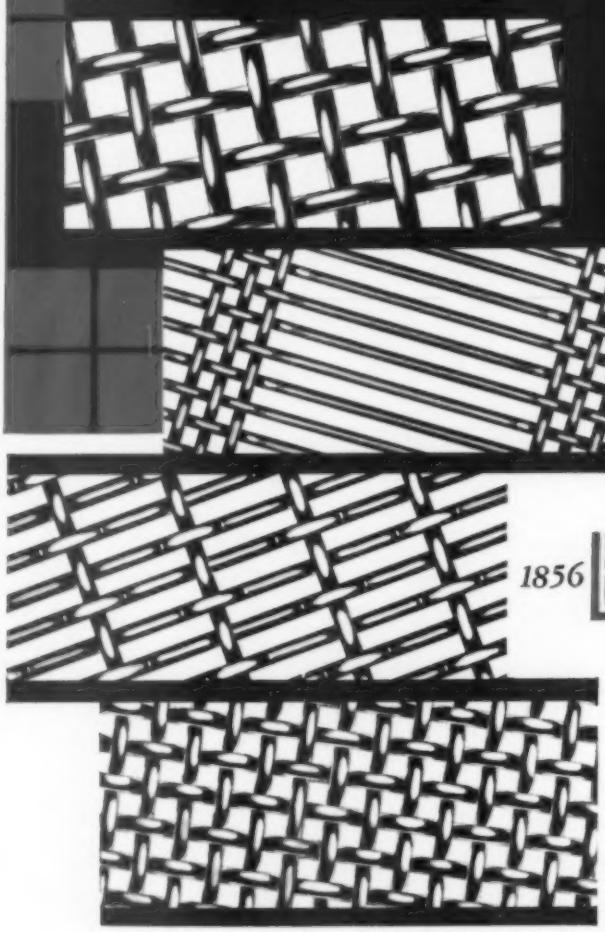
Unusual Arrangement of Kilns at Victorville, Calif., Plant of Southwestern Portland Cement Co

Economical!

Ludlow-Saylor

Super-Loy

WOVEN WIRE SCREENS



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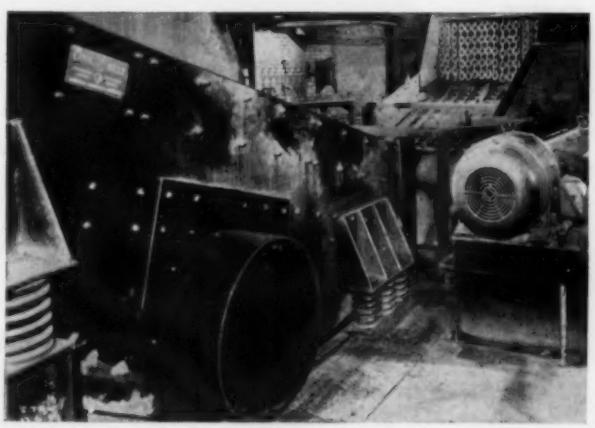

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pit and quarry

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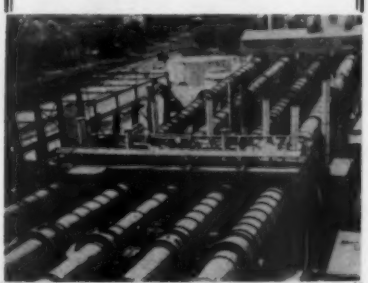

This view clearly shows the unusual arrangement of the nine kilns at the Victorville, Calif., plant of the Southwestern Portland Cement Company. The four newest kilns (background) are 10½- by 330-ft. units and have been installed at intervals of a year or so over the last six years. No. 9 went into operation in April, 1956, bringing the capacity of the plant to 6,000,000 bbl. annually. All kilns are equipped with modern heat-recuperating coolers compactly arranged between them.

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals.

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

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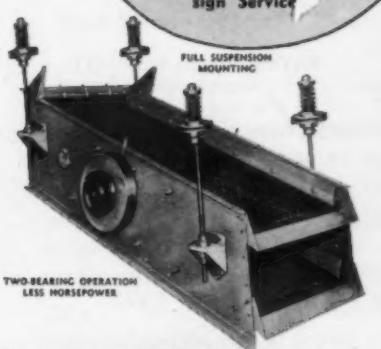

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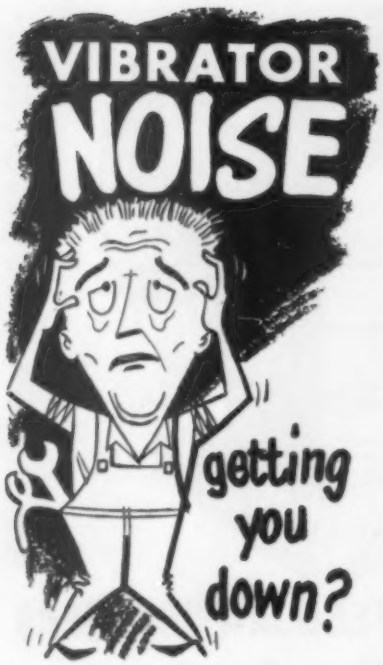

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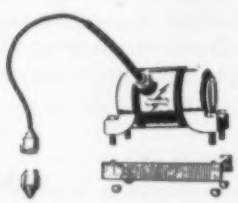

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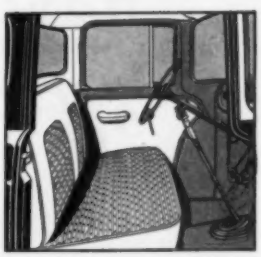

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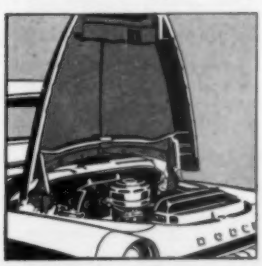

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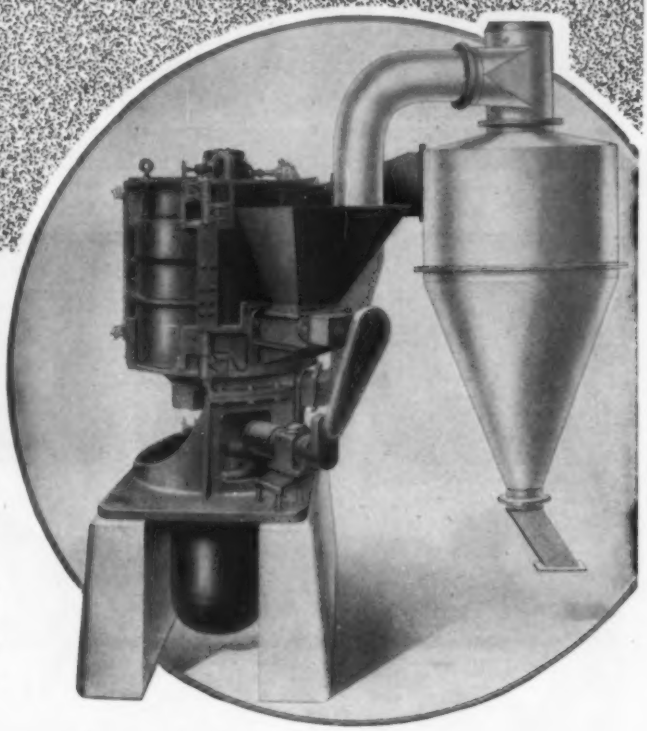

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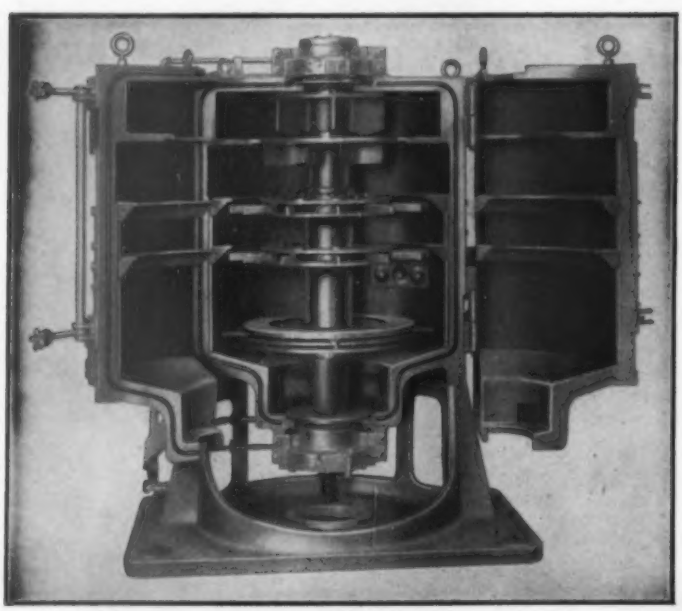

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The Editor's Page

Important Conventions Ahead!

IT is generally conceded that we are the most convention-minded people in the world, and this is something of which we should be proud. Probably no one thing has been more responsible for the economic progress of this country than the willingness of its businessmen to get together to discuss and settle their common problems. Most of them are now fully aware of the importance of these associations and conventions to their businesses. Governmental, legal, labor, and other matters are becoming so complicated and are changing so rapidly that the average producer cannot keep up with them. An alert and aggressive association can do these things much better.

The conventions of several of the major nonmetallic minerals industries are just ahead, and again we urge all producers—members or non-members—to attend. This year, more than ever before, we all need to get as much advance information as possible on what lies ahead of us. Never have businessmen been confronted with so many problems and with so much uncertainty as to the future.

THE important conventions, in the order in which they will be held, are as follows: The National Crushed Stone Association, 40th annual convention, Americana Hotel, Miami Beach, Fla., January 15 to 17, 1957; the National Agricultural Limestone Institute, Statler Hotel, Washington, D.C., January 22 and 23, 1957; the National Crushed Limestone Institute, Statler Hotel, Washington, D.C., January 24, 1957; 41st annual convention, the National Sand and Gravel Association and 27th annual convention, the National Ready Mixed Concrete Association, Statler Hotel, Los Angeles, Calif., February 11 to 14, 1957; National Concrete Masonry Association, 37th annual convention and 10th biennial Concrete Industries Exposition, Kiel Auditorium, St. Louis, Mo., February 25 to 28, 1957.

The two programs appearing in this issue, and partial information on the others, makes it certain that they will all equal or exceed the high standards of previous years. Top authorities will discuss the most timely and important subjects affecting these industries. Open forums, panel discussions, and operating session are established features of these meetings.

This convention listing reflects the trend in recent years toward holding the in-between-machinery-exhibition year conventions at attractive places, where those attending can enjoy warmth and sunshine along with the meetings. Up to a few years ago these groups felt that holding these meetings so far away from the large centers of production would prevent many from attending, especially the operating personnel who are so important to these meetings. A few such meetings held in the South and West, however, dispelled any such fears, as attendance was excellent in every case. Association members are now almost unanimously in favor of continuing this practice. An interesting sidelight was the surprisingly large percentage of top executives in these groups who had never before visited California or Florida. Apparently most of them had stayed much closer to their businesses than is customary in some other industries.

THE N.C.S.A. convention in Miami Beach will offer those attending an unlimited variety of entertainment and recreation between meetings. The night life is comparable with that to be found anywhere; there are innumerable excellent restaurants, night clubs, and theatres. Daytime entertainment includes surf and fresh water bathing, horse and dog racing, golf, fresh water and deep-sea fishing, etc. Tours to the Keys, the Everglades, Cuba, and other points are available.

The N.S.G.A.-N.R.M.C.A. conventions in Los Angeles offer an equally attractive variety of recreational activities, both night and day. Theatres, night clubs, famous restaurants, Hollywood, Disneyland, horse racing, golf, are only a few. Side trips may be arranged to Mexico, Catalina Island, Palm Springs, etc.

The N.A.L.I. and N.C.L.I. conventions in Washington offer many attractions, but one outshines all others. Reservations for these meetings include Monday, January 21, 1957, which is Inauguration Day. Those attending the conventions can see the inaugural parade from the Statler Hotel, which is on the line of march.

THE N.C.S.A. convention program is so arranged that those not able to come early or stay late can still take in some of the local daytime attractions, two afternoons being left open for this purpose. On Monday, January 14, preceding the regular convention, the Manufacturers' Division Board of Directors meets in the morning and the N.C.S.A. Board meets in the afternoon. The convention begins on Tuesday morning, January 15, and continues through Thursday afternoon, followed by the annual banquet on Thursday evening. The operating meeting will be held on Thursday morning, and Tuesday and Wednesday afternoons are left open.

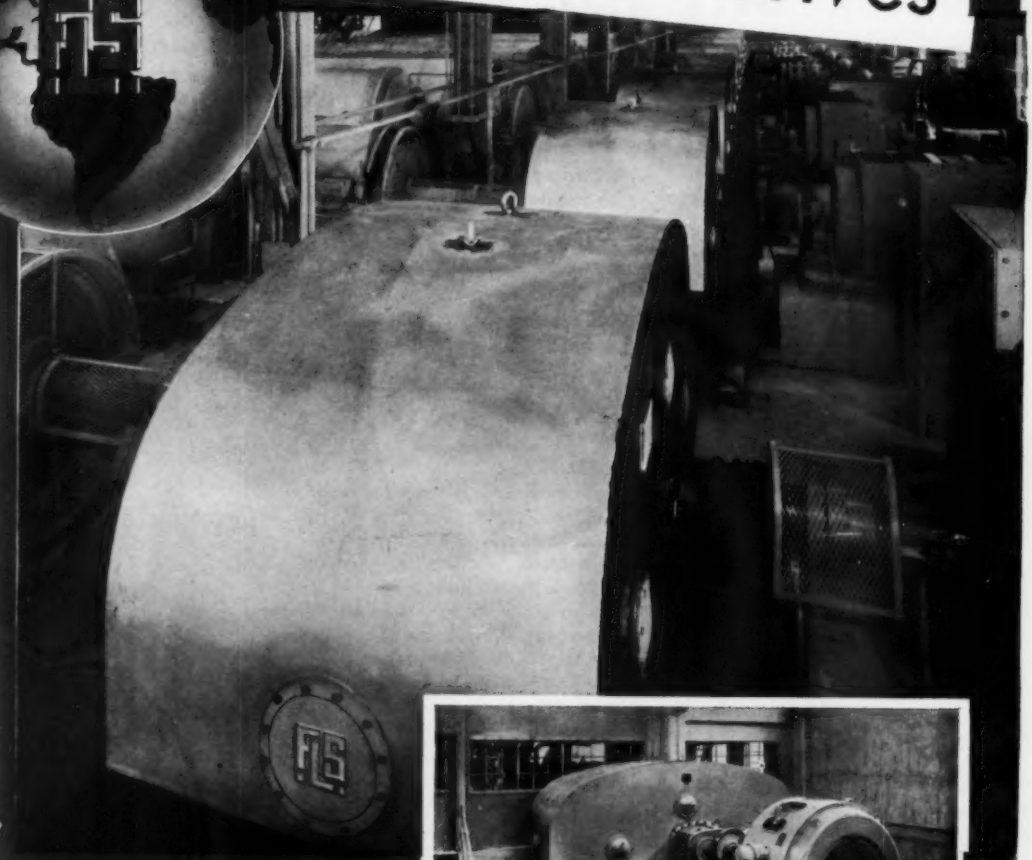
The N.A.L.I. sessions begin Tuesday morning, January 22, and continue through Wednesday afternoon; the annual banquet will be held on Wednesday evening. N.C.L.I. meetings are scheduled for all day Thursday.

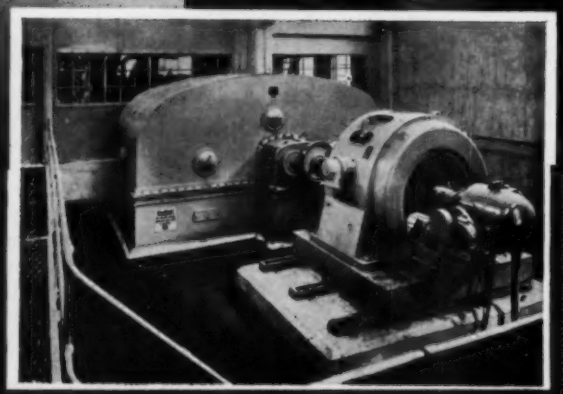
The complete official programs of the N.C.S.A. and the N.A.L.I. conventions are published in this issue of PIT AND QUARRY. Those of the N.S.G.A.-N.R.M.C.A. and the N.C.M.A. conventions will be published in the January Annual Review and Forecast Number.

Attendance at these meetings is more than ever a must for members and all other producers. Our industries are on the threshold of the most prosperous era in their histories, and many important problems confronting them will be discussed at the coming meetings. Added to the convention sessions are the recreational attractions already described. These are events no producer can afford to miss. If you have not already made your hotel reservation, we urge you to do so at once.

Walter E. Trauffer

Symetro Drives





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Washington News Letter

NOW that the election is over, virtually everyone in Washington is trying to figure out what really happened.

The Republicans, who should be elated by the President's overwhelming victory, really are not. Their loss of both houses of Congress, despite their supposed success, is a bitter pill to swallow. And what it may portend for the future is too unpalatable to contemplate.

The Democrats have an easier time of it. Their candidate's poor showing, which should be a cause for despondency, really is not. They have an easy "out"—That's what we get for running an "egg-head." Almost any Democrat will tell you that his party's victory in the Congress despite the President's amazing majority assures that the voters like Ike and the Democratic party. In the Democrat's view, it assures a complete Democratic victory the next time around. The fear that this analysis is correct is giving the victorious Republicans the most sleepless nights.

These were the first thoughts expressed. Now some second thoughts are beginning to appear. They are taking shape along other lines.

If the election proved anything, it proved that party lines are getting weaker—or, to put it another way, the number and proportion of independents is increasing. This year's unprecedented vote splitting proved that. The Eisenhower victories in many of the states in the solid South also support that conclusion.

Vote splitting, especially, is a surprising phenomenon, in view of the fact that nothing has been done to facilitate it. If anything, the substitution of voting machines for paper ballots in many areas has made a straight party vote so simple that it would seem to be almost irresistible. Nevertheless, millions of people appear to have mastered the intricacies of this awesome gadget sufficiently to pick and choose among the levers in order to come up with the precise combination which suited their taste.

By S. HERBERT UNTERBERGER

Fundamentally, this trend is a testimonial to the high level of mechanical aptitude which the ordinary American has acquired. This probably could have been anticipated with a little reflection on the fact that the American housewife, who has learned to operate efficiently in a house full of appliances, would hardly be stopped from voting for her favorite men by a thing like a voting machine or even by a ballot big enough to wrap a holiday turkey.

The Republicans are beginning to wonder whether they may have been responsible for a good proportion of the vote splitting which occurred. By running a campaign that featured a single individual, the President, they managed to reinforce the notion that the man transcended the party. From that premise, it was not difficult for many voters to arrive at the conclusion that voting for the man and the other party was the expected behavior; that, indeed, was a perfectly acceptable thing to do. In fact, popular opinion now seems to indicate that the terms "independent voter" and "vote splitter" are considered synonymous.

This rather unusual election might be regarded with approbation as the finest expression of democracy in action, if it did not leave the nation's administration in a singularly inflexible condition. This is particularly unfortunate during a period of extreme tension in world affairs, when flexibility and the possibility of taking speedy action may be vitally necessary.

An administration controlled by one party with a particular set of political standards, faced by a Congress dominated by another party, having different political views, could be the perfect formula for complete inaction. Many observers of the Washington scene are predicting this kind of impasse for the next four years.

It is unlikely that the situation will be quite so serious. While a stalemate probably will not occur too frequently, even though each group essentially has a veto power over action by the other, some measure of agreement will be necessary for action. Past experience demonstrates that achieving such agreement is not impossible, but it is time consuming.

Fortunately, at least in the past, agreement has been secured most easily when time is of the essence, that is, in connection with foreign affairs. While a true bipartisan foreign policy has probably not existed in any complete sense since the end of World War II, in critical situations it has been possible to gather enough strength from the non-isolationist elements of both parties, so that the Administration has not been left completely without support.

Nevertheless, on all but critical issues, a stalemate is possible—or at least inaction for fear that any action taken will call forth loud criticism. Unless difficult economic conditions develop, it can be expected that there will be much talk but very little action on domestic issues such as taxes, labor legislation, the budget, debt reduction, housing, farm problems, and Federal Aid to schools.

The President has pledged to work toward rebuilding the Republican Party along the lines of a new Republicanism. Some believe that this is tantamount to rebuilding it in his own image. The underlying reasoning is that the President has shown the Republicans that the winning formula is a liberal program with a conservative caste. To most of the Republicans in Washington who want to stay there, this certainly looks like the right course of action. However, they feel some uncertainty as to wether it will produce the desired results. They worry about the fact that it didn't seem to work for Senator Duff in Pennsylvania, Congressman Walker in Idaho, or Secretary of the Interior McKay in Oregon, all of whom were dedicated supporters of the Eisenhower program, more recently called the new Republicanism.

Here in Washington the uneasy

(Continued on page 26)

The BIG SCREEN for the BIG JOBS

ALLIS-CHALMERS SCALPING SCREEN

FIELD TESTED FOR 3 YEARS

- **Engineered to Handle the Toughest Job in Any Rock Products Flow**
- **Extra-Large Mechanism**

HERE'S an *extra heavy duty* screen built to take punishing loads coming from your primary crusher. Its rugged cartridge-type, oil-lubricated mechanism features giant bearings — the largest ever installed in a vibrating screen. The heavy I-beam and channel-constructed screen deck support frame can withstand impact of large pieces and high tonnage.

Reduced Maintenance — Simplified two-bearing cartridge mechanism can be pulled out after removing sheave and four bolts. Large size bearings mean extended life, less frequent replacement.

Vibration Isolation — Standard design includes multi-unit vibration *isolators* — two per corner, each with an inner and outer spring arrangement. Vibration to building or structure is isolated even when sticky materials adhere to the screen.

For complete information, see your A-C representative or write for Bulletin 07B8368, Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-5063

In place of wasteful and uncertain crankcase-oil changing based upon mileage or hours in service, many operators of heavy-duty construction equipment now use a better guide that saves them both time and money.

Now you can test used oil in minutes

IT HAS COME as something of a surprise to some maintenance men to discover that they have been throwing away hundreds of gallons of still-good oil . . . year after year. Conversely, it is quite a jolt to realize that a costly engine-repair job could have been prevented by an on-the-spot analysis that would have shown up the condition . . . in minutes!

The recommendations for oil changes issued by engine makers have always been computed on "averages" for the various classes of vehicle service. And like the "average" man on the insurance chart, the average vehicle doesn't exist in the actual fleet. For example, two bulldozers of the same make and model, operating on the same job, can have quite different patterns of oil economy and engine condition. Obviously no one set of rules can apply ideally to all units. And fortunately there is no longer any need for such generalization.

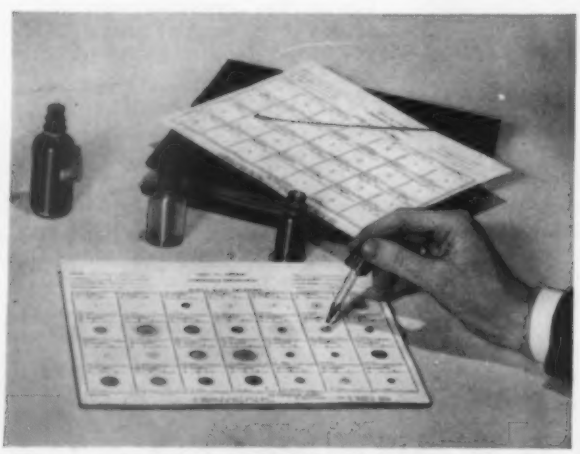
From a couple of drops of used oil, the Shell "ADC* Oilprint Analysis" provides a reliable check of oil condition, in minutes. It is very simple, and with a little practice, it tells you a lot about that oil and the engine that uses it.

What a drop of used oil shows: You place a drop of used oil on a piece of special filter paper supplied by Shell . . . let it stand a minute or two. You will then be able to *see* the following:

Water dilution: Even a tiny amount of water shows up . . . and that means not only that your oil is losing its ability to protect engine parts, but it also shows whether the water represents a normal amount of condensation or something more serious, such as an actual leakage of coolant from a faulty jacket.

Dispersancy/detergency: The same oil drop will give you a picture of how well the special additives in the oil are doing their job . . . whether or not the contaminants are being held in suspension where they do least harm . . . whether the cleansing and dispersing actions are adequate . . . whether the oil is still good.

Adulteration: The color of the oil spot will show whether too much contamination is occurring . . . and will very often point up the cause, indicating a check on



The simple test setup: sample bottles, a wire rod, a bottle of "indicator," and the permanent record card.

This single, on-the-spot sample reveals many things about an engine.

A fleet superintendent sees how easily the test is made.

injectors, nozzles, oil and air filters of diesels, or on plugs, carburetors and filters of gasoline engines.

All of the above can be learned from the single drop of oil . . . in an amazingly short time.

Alkalinity: Engine wear and engine deposits increase as the oil becomes acidic in nature due to contamination from combustion products. A special indicating fluid, developed in Shell Laboratories, tells at a glance whether oil is alkaline and still usable, or acid *and how much.*

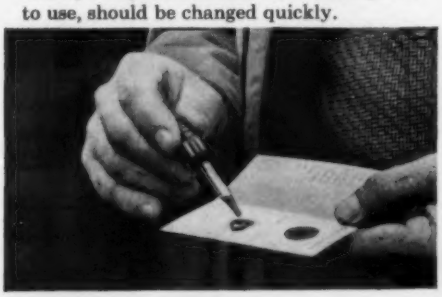
Operators who keep an ADC Oilprint Analysis record of each vehicle generally find that the crankcase oil stands up longer than they had figured . . . a distinct saving in lubrication cost. At the same time, there is a running check on each engine that often detects impending trouble before its correction becomes costly. In this respect, the Shell ADC Oilprint Analysis qualifies definitely as one of the valuable recent tools of preventive maintenance.

If you are concerned with extending the service of crankcase oil, and with avoiding the risk of using oils loaded with contaminants, we suggest that you have one of the Shell service engineers demonstrate ADC Oilprint Analysis for you.

*Trademark

Photo shows an oil-spot test card...one phase in the visual life record of a charge of oil.

The Shell "indicator" shows acidity instantly. If spot turns red, oil is no longer fit to use, should be changed quickly.



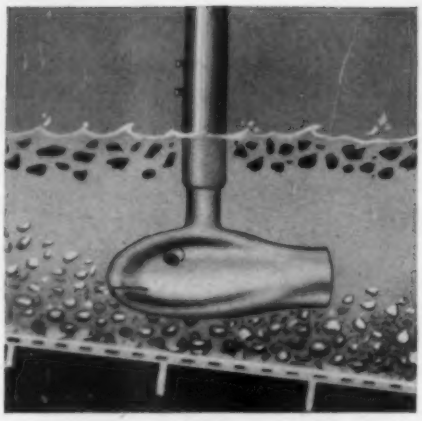
SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

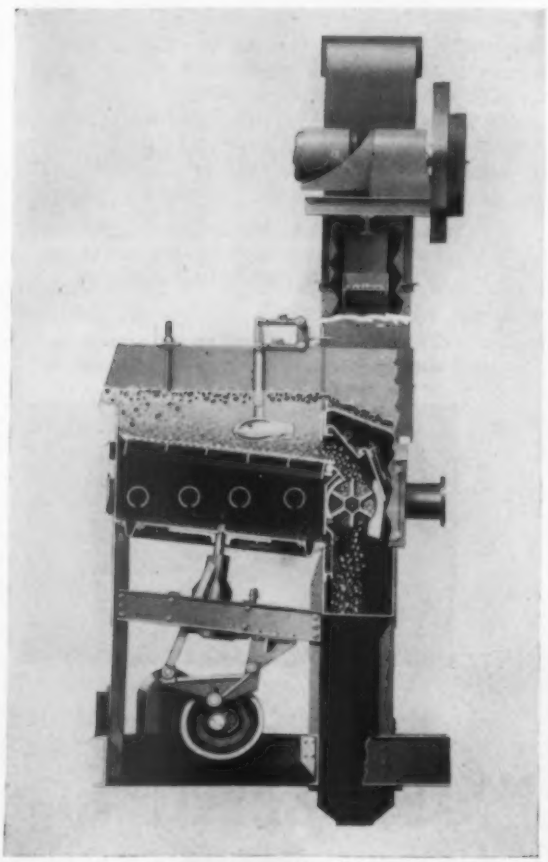
SHELL

Jigging stratifies materials according to specific gravity, separating solids in upward and downward pulsations of water. The heavier materials settle to the screen plate and are drawn off. The lighter materials overflow.

Jigging is a universal separating process for materials ranging from the specific gravity of gold at 19 to coal at 1.3. Proportions of high gravity materials may vary from 90% to 10% or less. It is applicable to any separating problem where there are even small differences in specific gravity.



a low-cost method of cleaning your sand and gravel...



Cross Section of Jeffrey Heavy-Duty Sand-and-Gravel Jig.

• You can increase your production and profits with a Jeffrey sand-and-gravel jig. Materials as quarried are fed to the jig. Coal, shale, clay, roots and sticks are removed, leaving sand and gravel of marketable grade. Capacities up to 75 tons per hour.

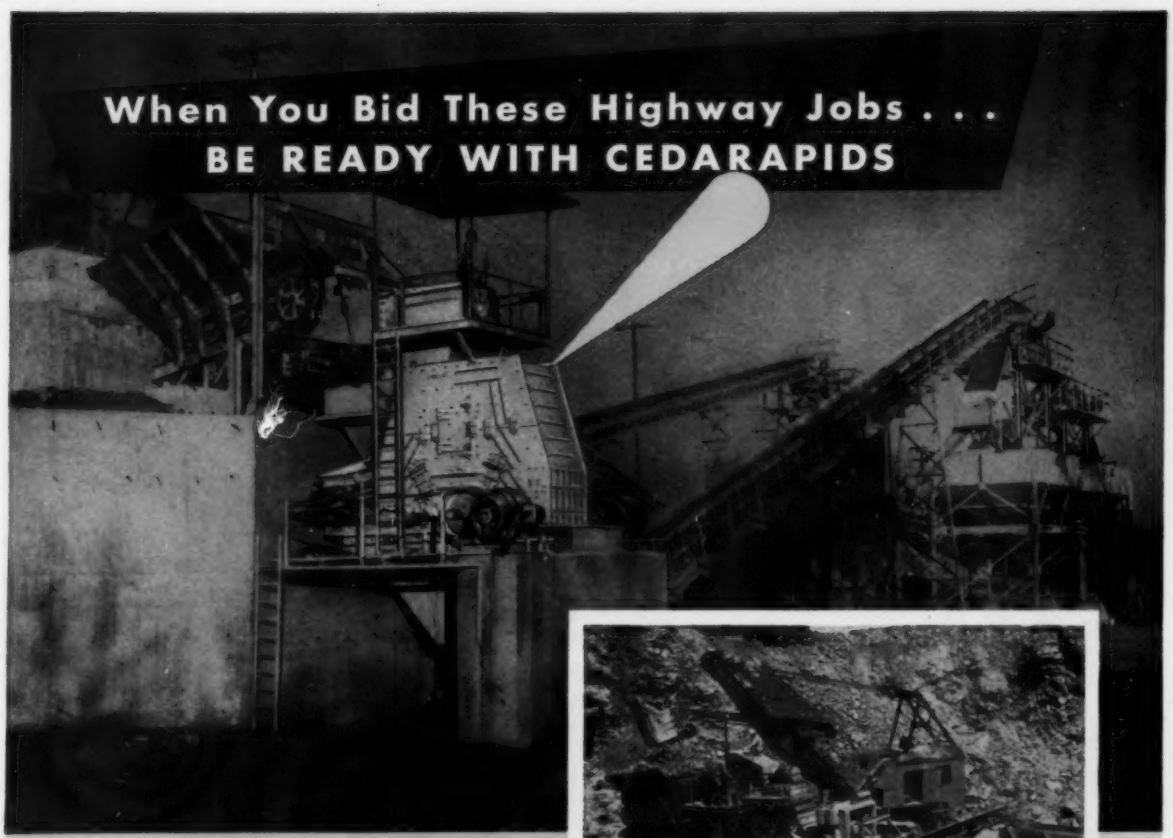
Jeffrey jigs have been used successfully for many years. Jeffrey engineers are fully qualified to advise you on sand-and-gravel problems.

Bulletin 892 describes Jeffrey sand-and-gravel jigs and gives data useful to men who are laying out a plant. For a copy, write to The Jeffrey Manufacturing Company, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

When You Bid These Highway Jobs . . .
BE READY WITH CEDARAPIDS



(above) In hard limestone with 16% silica, this 4350H Double Impeller Impact Breaker produced 2400 tons per day, of which 1900 tons are 1" material or larger.

(right) Portable Double Impeller Impact Breaker eliminated dirt and soft stone to meet Kansas Turnpike specifications with 250 TPH production.

You get more specification aggregate from mixed, dirty and wet material with

CEDARAPIDS DOUBLE IMPELLER IMPACT BREAKERS

With specifications getting tougher, and aggregate material often of questionable quality, more and more producers are turning to Cedarapids Double Impeller Impact Breakers. It's one of the most successful money-makers in difficult conditions for either portable or stationary applications. These efficient units are easily adjusted to produce a minimum of fines and crush, selectively, mixed hard and soft material to desired sizes. They work efficiently in wet and dirty material because it won't pack in the breaking chamber.

High ratio of reduction . . . *up to 40 or 50 to 1* . . . produces big tonnages of specification aggregate in one pass. Maintenance is low since the entire area of the breaking chamber is used for reduction by rock striking rock in suspension.

While many of these units are working in limestones, they are also successfully used for gravel, basalt, dolomite, sandstone, iron ore, lead ore, zinc ore and uranium ore. For the complete story, see your Cedarapids Dealer today.

OTHER CEDARAPIDS CRUSHING EQUIPMENT

The complete line of Cedarapids crushing equipment will handle practically any aggregate production problem in portable or stationary plants. Ask about Single or Twin Jaw Crushers, Roll Crushers, and Hammermills, available in a wide range of sizes. Also Horizontal Vibrating Screens, Conveyors, Vibrating Grizzlies, etc.

Cedarapids — Built by IOWA

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

Basic Idea

SOLVES MANY REDUCER MOUNTING PROBLEMS

FOOTE BROS. NEW

Line-O-Motor Drive

One base supports both speed reducer and motor in this simple, practical and foolproof mounting system . . . Now you can use standard N.E.M.A. motors and make change-overs in minutes—reducing both costly down-time and motor inventory.

Line-O-Power motorized drive solves many old problems . . . and opens new fields of advanced design for new applications. Available 1-75 H. P. for all Service Classes—Horizontal, Vertical, and Vertical Extended with Foot or Flange mounting—Double or Triple Reduction units available in Ratios from 5.06:1 to 238:1.

FOOTE BROS.

Better Power Transmission Through Better Gears

4545 S. WESTERN BLVD., CHICAGO 9, ILLINOIS

Write for your Line-O-Motor Catalog today

A *single strand* of the mighty No. 860 chain can handle 30" buckets!

Now you can use one strand in place of two

Biggest. With an 18" span between outside holes in the K-4 attachment link, a *single strand* of Kensington's new No. 860 elevator chain easily handles buckets up to 30" wide.

Strongest. The No. 860 chain is heavied-up at all critical points. At its weakest point, for example, it has a cross section of 3.75 square inches at 76,000 lbs. psi for an ultimate strength of 285,000 lbs. Using the customary 6:1 safety factor, this means the No. 860 has a safe working load of 47,500 lbs. . . . *almost 50% more than the next strongest elevator chain on the market!*

Consider too, the 1½" pins . . . live bearing area, barrel contact area, ¾" bucket bolts. Or whatever basis you compare, the No. 860 far excells in ruggedness.

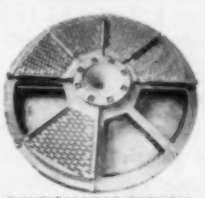
Built of KENKROME. The No. 860 chain is built from KENKROME . . . an unusual alloyed manganese steel specially created by Kensington to resist wear and abrasion.

Exceptionally hard to begin with, KENKROME has the ability to develop even greater *surface hardness* when exposed to use. Yet beneath this ever-hardening "skin", the metal stays tough and able to withstand the shocks and impact that break steels which are hard all-the-way-through.

Kensington renewable tooth sprockets are also big money savers. KENKROME Tooth Segments can be replaced by 2 men during lunch hour . . . without even removing the chain! And a new set of teeth cost only a fraction of what you'd pay for a complete one-piece sprocket.

When you order your next elevator chain, it will pay you to specify Kensington's No. 860 Chain and Renewable Tooth Sprockets.

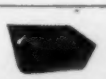
Other wear-resisting KENSINGTON replacement parts:



DIVISION HEAD SECTION
for grinding mill has exclusive design features which greatly prolong service life.

SCREENS, GRATES, LINERS
and other alloyed manganese steel replacement parts fit all standard cement mills.

CHAINS, SPROCKETS
150 different standard chains and sprockets plus many special models . . . all of wear-defying KENKROME.



KENKROME ELEVATOR BUCKETS
far outlast ordinary fabricated buckets wherever abrasion and impact are important factors.

Kensington STEEL COMPANY

KENSINGTON STEEL CO., Dept. P, 505 Kensington Ave., Chicago 28, Ill.
SUBSIDIARY OF POOR & COMPANY, CHICAGO

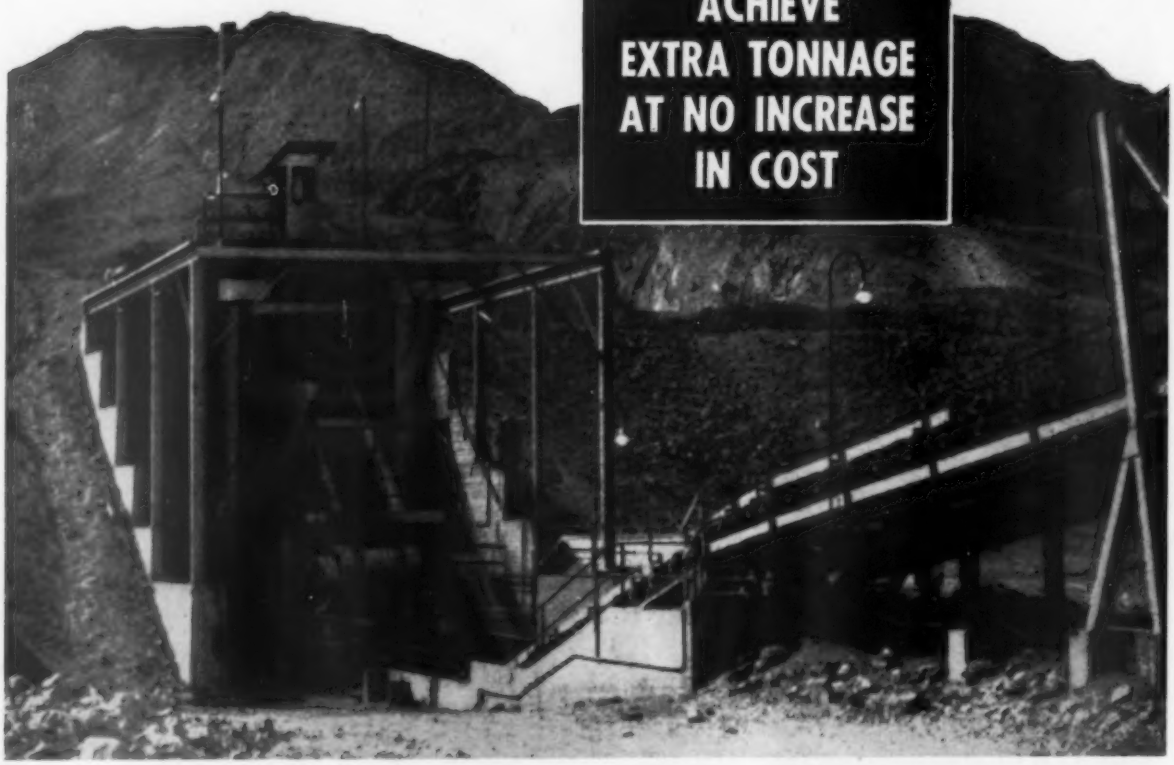
☐ Please send me more information on the No. 860 chain
☐ Please send information on the following special wear-resisting replacement parts:

NAME_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

Get a Better Break on Stone Reduction with

TRAYLOR JAW CRUSHERS

ACHIEVE EXTRA TONNAGE AT NO INCREASE IN COST



TRAYLOR Jaw Crushers are Traylor-Made to give you the break you need for cutting production costs on primary rock crushing. Traylor Curved Jaw Plates reduce choking and packing to achieve greater hourly tonnages of more uniform product . . . *at no increase in power requirements.* Less churning and slippage of the material being crushed also reduces unnecessary wear; as a result Traylor Curved Jaw Plates often outlast ordinary straight plates by as much as 3 to 1.

The massive construction of Traylor Jaw Crushers stands up to the heaviest round-the-clock production schedules with less down-time and lower maintenance costs. Available in 5 types and 33 sizes with feed openings from 8″ x 12″ to 60″ x 84″, Traylor Jaw Crushers provide you with the capacity for crushing from 4 to 1,000 tons of rock per hour.

Write today for your copy of bulletin 11-120 which describes and illustrates many cost cutting features of Traylor Jaw Crushers.

Traylor

TRAYLOR ENGINEERING & MFG. CO.
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SALES OFFICES: New York · Chicago · San Francisco
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P.Q.

PRIMARY GYRATORY CRUSHERS

ROTARY KILNS

SECONDARY GYRATORY CRUSHERS

BALL MILLS

JAW CRUSHERS

APRON FEEDERS

EIMCO 105 – A LOADING CYCLE TIME SAVER

Working for a major railway firm in track maintenance operations, an Eimco 105 Tractor-Excavator provides extra-production capacity in loading out a 50-cubic-yard car every eight minutes. The Eimco loads 125 cubic yards more every hour than the machine it replaced.

For this steady job, the 105 is equipped with the high discharge rocker arms and bucket.

The Eimco replaced a 1½ yard shovel that was loading five cars an hour. Before the operator mastered extra-production features of the 105, it was loading six cars an hour. With an experienced operator, it now averages 7½ cars an hour.

Previously, one of two dozers pushing gravel toward the loading edge, came off the 50-foot-high pile to push loaded cars to the switch. The 105 now accomplishes this task and the shovel and one dozer have been released to work elsewhere.

How does the 1½ yard Eimco, with an initial investment that is nearly one-third less, take on extra duty and still increase production?

The answer is in the 105's ability to save time during every loading cycle. With one hand, the operator pushes two, easy-to-reach levers and the Eimco moves in for a load. Powerful crowding actions fills the bucket quickly. He pulls the levers and the 105 reverses to the haulage car while the loaded bucket is elevating in an arc.

When the Eimco is in dumping position, the bucket is in discharge position. There's no lost motion between loading and discharge.

Independent track control permits the 105 to maneuver fast and sharp—another time saver.

And shifting between high and low speeds—forward and reverse—is done under maximum loads at anytime without injury to the transmission. You don't have to stop to shift—or hesitate until the tachometer needle falls below the recommended RPM reading.

The best way to get an idea how the Eimco 105 will increase your production is to watch it perform. You can arrange this today by writing Eimco.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

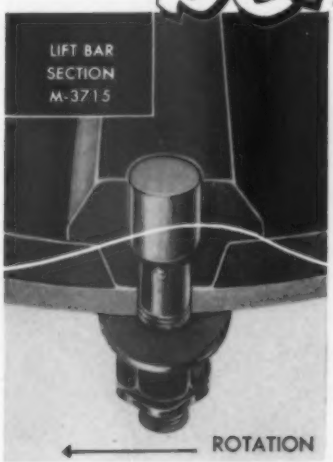
New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

EIMCO

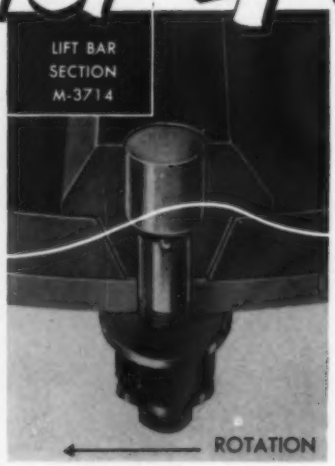
B-327

Four USS Lorain Rolled Plate Linings

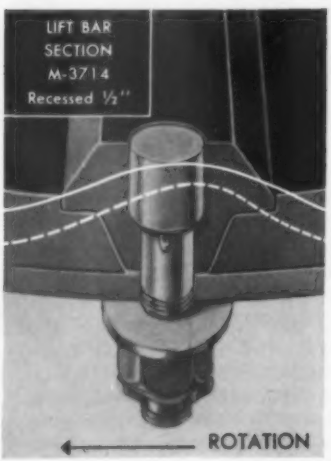
better 4 ways...



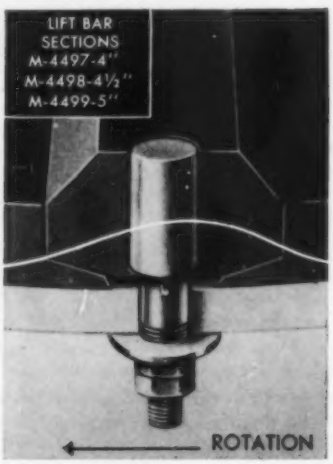
This type of low-cost lining is recommended for cement and soft grinding jobs. Plates are available in 1¼" and 1½" thicknesses. Bars are 6" wide—with 1⅜" lift. Ideal with balls up to 1¼" diameter. Line indicates maximum wear pattern.



Plates are available in 1½", 2", 2½" and 3" thicknesses. Bars are 7" wide—2½" lift. Designed for use with larger diameter balls up to 4". Line indicates maximum wear pattern.



Plates are available in 2", 2½", and 3" thicknesses. Bars are 7" wide. With the ½"-deep plate recesses, lift is 2". Because of the recessed design, bearing surface is retained, permitting replacement of lift bars for extended service. Solid line indicates wear pattern with original bars. Dotted line indicates wear line of replacement bars.



Heavy duty linings and lift bars for toughest grinding assignments. Plates are available in 2", 2½" and 3" thicknesses. Bars are 8⅜" wide. Variable lifts from 1⅛" to 2½" are available. Line indicates maximum wear pattern.

These four important features of USS Lorain Rolled Plate Linings mean peak grinding efficiency . . . no matter what the grinding assignment. Compare them with *any* other liners on the market.

1. These are the only linings made of *hot rolled* steel. Our bars and plates are not castings, but are special hot worked steel, given superior toughness that eliminates breakage even when worn to paper thinness.

2. Lift bars are of rolled alloy steel with extra hardness and toughness that provides lift and better grinding efficiency throughout the life of the lining. For more severe service, bars are heat treated.

3. Lift bars and lining plates are made to exact dimensions for close tolerances that permit snug fit and eliminate shell wash—no zincing required.

4. Better design, better materials – they permit the use of thinner linings, thus increasing mill capacity.

Call on us for expert technical assistance on any grinding problem.

UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

See The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

USS LORAIN ROLLED PLATE LININGS and USS GRINDING BALLS

6-2890

UNITED STATES STEEL

News of the Industry

● Among those attending the recent National Lime Association meeting who visited the Springfield and Galloway facilities of the Ash Grove Lime and Portland Cement Company were the members lined up here before one of the plants. The group first toured the Springfield location, where they inspected the entire plant, from stone-handling to loading stations.

Volunteer Portland Cement To Expand Present Plant For 3,000,000-Bbl. Output

Officials of the Volunteer Portland Cement Company, Knoxville, Tenn., announced that the anticipated addition to their present plant will cost from $3,000,000 to $4,000,000. The expansion program includes an additional kiln, which will increase production to approximately 3,000,000 bbl. of cement annually. The kiln is expected to be in operation by January, 1957.

Charles F. Lewis, president, said that this is the third major expansion program for the plant since it began operations in 1928 with two kilns and a capacity of 1,000,000 bbl. a year. Last year several silos were added to increase storage space and to permit full production to continue through the winter months.

The entire program of expansion now under way is planned to increase the plant's capacity by about 40 percent.

A. W. Wood Elected President Of Natl. Slag Association

At the 39th annual meeting of the National Slag Association in Washington, D. C., on October 25, the following officers were elected for the year 1957: A. W. Wood, president; C. W. Ireland, vice-president; E. W. Bauman, managing director; and W. S. Shaw, treasurer.

Members at large chosen to serve on the executive committee with the officers are as follows: R. O. Dierker, president, Duquesne Slag Products Co., Pittsburgh, Pa.; Edward C. Levy, president, Edward C. Levy Company, Detroit, Mich.; R. K. Plumb, manager, slag sales, United States Steel Corp., Pittsburgh, Pa.; and H. N. Snyder, president, The Buffalo Slag Co., Inc., Buffalo, N. Y.

Mr. Wood is general manager of the Cleveland Slag Division, Standard Slag Co., and president of the Lorain Slag Co. Mr. Ireland is president of the Birmingham Slag Co., Birmingham, Ala.

Ideal Cement Co. Starts Multimillion-Dollar Project Of Expansion at Okay, Ark.

Work on the long-deferred expansion of Ideal Cement Company at Okay, Ark., is now under way. Construction is to begin at once. Cost of the project will be between $6,000,000 and $8,000,000.

The expanded facilities are designed to handle all cement needs in Arkansas and northern Louisiana. One major outlet is the $13,000,000,000 federal highway program.

Coming Events

January 15-17, 1957 — Miami Beach. 40th annual convention, National Crushed Stone Association. Americana Hotel.

January 22-23, 1957—Washington. Annual convention, National Agricultural Limestone Institute, Inc. Statler Hotel.

January 24, 1957—Washington. Annual convention, National Crushed Limestone Institute. Statler Hotel.

January 27-30, 1957 — Chicago. 38th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

January 28-February 2, 1957 — Chicago. 55th annual convention, American Road Builders' Association, Convention and Road Show. International Amphitheater.

February 11-14, 1957 — Los Angeles. 41st annual convention, National Sand and Gravel Association, and 27th annual convention, National Ready Mixed Concrete Association. Statler Hotel.

February 24-28, 1957—New Orleans. Annual meeting, American Institute of Mining, Metallurgical and Petroleum Engineers. Roosevelt Hotel.

February 25-28, 1957—St. Louis. 37th annual convention, National Concrete Masonry Association, and 10th biennial show, Concrete Industries Exposition. Kiel Auditorium.

Building Volume Decreases For 37 Eastern States— 10-Month Total Shows Rise

Contract awards for future construction in the 37 eastern states in October totaled 1,706,406,000, a decrease of 8 percent, compared to October, 1955, according to the F. W. Dodge Corporation, construction news and marketing specialists.

Dodge stated that the first 10 months' cumulative total of awards amounted to a dollar volume record of $21,147,472,000, an increase of 6 percent, compared to the like 1955 period.

October figures for the major construction categories show the following: non-residential at $675,414,000, down 2 percent, compared to October, 1955; residential at $656,464,000, down 16 percent; and heavy engineering at $374,528,000, down 2 percent.

All major construction categories established new dollar volume records for the first 10 months' cumulative totals. The awards were as follows: non-residential at $7,653,084,000, up 8 percent, compared to the like 1955 period; residential at $8,751,101,000, up less than one percent over the corresponding 1955 period; and heavy engineering at $4,743,287,000, an increase of 14 percent over last year's January-October period.

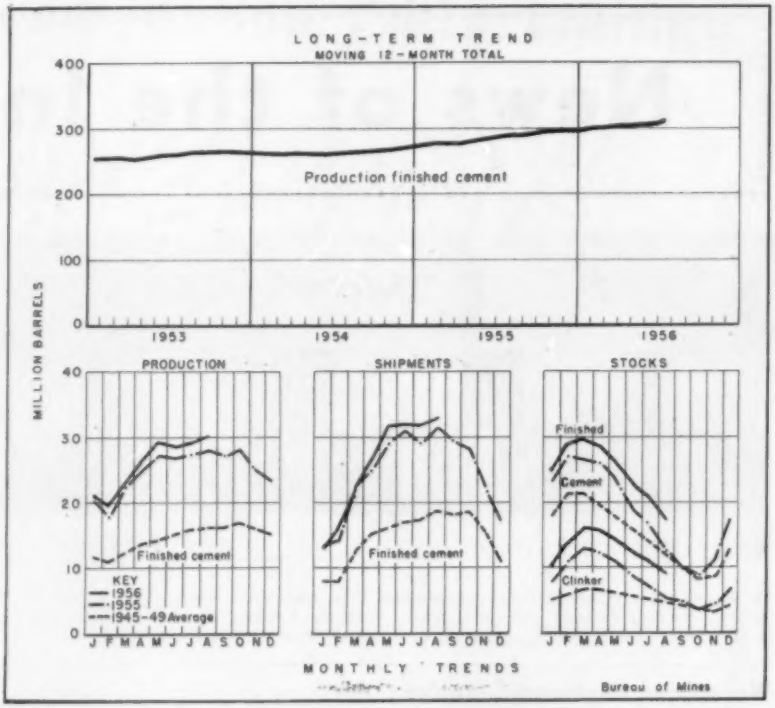
Western Gypsum Products To Build $3,000,000 Plant

Western Gypsum Products Ltd., Vancouver, B. C., plans to construct a $3,000,000 plaster mill and gypsum wallboard plant on the city's waterfront. The new plant will be completed early in 1958. Initial production will be 150,000 sq. ft. of gypsum board products and 100 tons of plaster daily.

Gypsum rock will be landed at the company's deepsea dock by a 17,000-ton freighter, which will pick up its cargo at San Marcus Island, Mexico.

Western Gypsum is a wholly—owned subsidiary of British Plaster Board (Holdings) Ltd. of London, which carries on research and mining, manufacturing, and distribution of gypsum in various parts of the world, including England, Ireland, Scotland, Sweden, France, Rhodesia, and South Africa.

The microfilm edition of Volume 48 of PIT AND QUARRY (July, 1955-June, 1956) is now available. This is a complete edition, including advertising as well as editorial pages.



SUMMARY—Production of finished portland cement in August, 1956, as reported to the U. S. Bureau of Mines, totaled 30,055,000 barrels, an increase of 8 percent over the August, 1955, figure. Mill shipments in August, 1956, totaled 33,324,000 barrels, an increase of 6 percent over the August, 1955, figure. Stocks of 17,046,000 barrels of finished portland cement on hand August 31, 1956, were 34 percent more than that on hand August 31, 1955. Clinker production during August, 1956, totaled 28,344,000 barrels, an increase of 8 percent over the August, 1955, figure.

PRODUCTION—One hundred and fifty nine (159) plants in 37 states and Puerto Rico reported a production of 30,055,000 barrels of finished portland cement during August, 1956, compared to 27,861,000 barrels in August, 1955.

Clinker production during the month of August, 1956, was 28,344,000 barrels, compared to 26,258,000 barrels in August, 1955.

High-early-strength portland cement produced during August, 1956, totaled 780,000 barrels, a decrease of 6 percent from the 830,000 barrels produced in August, 1955.

Prepared masonry cement produced in August, 1956, totaled 1,359,000 barrels, an increase of 8 percent over the 1,256,000 barrels produced in August, 1955.

SHIPMENTS—Mill shipments of finished portland cement for August, 1956, totaled 33,324,000 barrels, compared to 31,580,000 barrels in August, 1955.

In August, 1956, fourteen (14) districts showed an increase in shipments over August, 1955, and nine (9) districts showed a decrease. The greatest increases were in the Colorado-Arizona-Utah, eastern Pennsylvania-Maryland, and Louisiana-Mississippi districts. The greatest decreases were in the Oregon-Washington, eastern Missouri-Minnesota-South Dakota, and Indiana-Kentucky-Wisconsin districts.

Mill shipments of high-early-strength portland cement in August, 1956, totaled 1,082,000 barrels, an increase of 2 percent over the 1,066,000 barrels shipped in August, 1955. Nearly half of these shipments were from mills in two districts, eastern Pennsylvania-Maryland and Michigan. No shipments were made from mills in Puerto Rico.

Mill shipments of prepared masonry cement in August, 1956, totaled 1,524,000 barrels, a decrease of 3 percent compared to the 1,568,000 barrels shipped in August, 1955. Nearly two-thirds of these shipments were from mills in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. barrels although they are sold in barrels of varying weights.

STOCKS—Mill stocks of 17,046,000 barrels of finished portland cement were on hand on August 31, 1956, 34 percent more than the 12,731,000 barrels on hand August 31, 1955. Stocks of clinker on hand August 31, 1956, totaled 9,157,000 barrels, an increase of 65 percent over the 5,554,000 barrels on hand August 31, 1955.

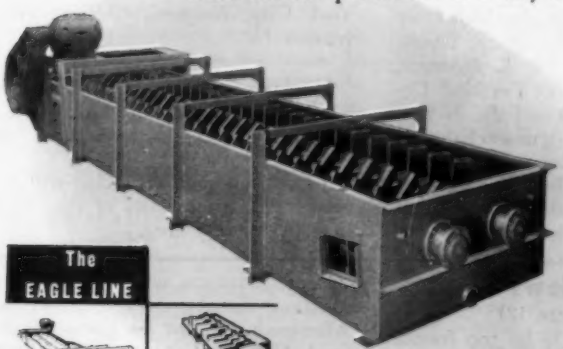
A copy of this film can be obtained for $9.80 from University Microfilms, 313 N. First St., Ann Arbor, Mich.

A. E. RICH has been appointed general plant superintendent of Permanente Cement Company's Cushenbury plant at Lucerne Valley, Calif. He joined the Kaiser interests in 1932, during the construction of the Bonneville Dam. In 1924 he was transferred to Kaiser Aluminum and Chemical Corporation's Salinas operations, and in 1950 he was made assistant production superintendent at Permanente.

at CONSTRUCTION AGGREGATES CORP., Ferrysburg, Mich.

EAGLE LOG WASHER eliminates 4 soft stone hand pickers!

Construction Aggregates Corp. is located on the Grand River near Lake Michigan, in western Michigan. Output averages 1000 t.p.h. A large percentage of the finished product is shipped by self-unloading lake boats to cities on the Great Lakes. Construction Aggregates regularly produces 150 different specifications of material including foundry sand. Annual production is nearly 1½ million tons.



Minus 1½" gravel from a scalping screen is fed to an Eagle Log Washer which breaks up and washes out 80% plus of the soft stone and hard clay lumps encountered. Before installing the log washer four or five men were required at the screen to pick out soft stone and clay lumps—now only one man is required to watch the screen. The Eagle Log Washer assures material that will meet specifications.

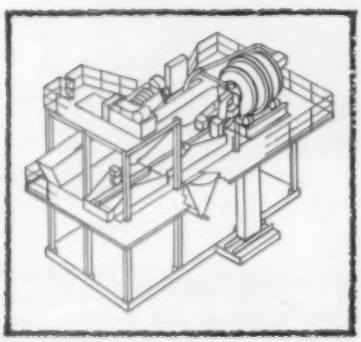
The replaceable corrugated paddle shoes of wear resistant Ni-Hard alloy iron have a washboard effect in abrading and scrubbing gravel, crushed stone or ore. Tubular steel paddle shafts are non-deflecting. Water-lubricated, Hydro-tex marine type bearing eliminates bearing troubles. Truly a log washer you can trust and that will make money for you. Send for 44-page Catalog 55.

EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

EAGLE IRON WORKS

133 HOLCOMB AVE., DES MOINES, IOWA

preferred



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are the most widely preferred HMS plants because they provide ***proven design at predetermined cost—trouble-free operation from the first day.***

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Offices and representatives
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of the United States and Canada
and in major countries
throughout the world.

George E. Warren Elected Chairman of P.C.A. Board Succeeding Emory M. Ford

George E. Warren, president of Southwestern Portland Cement Company, Los Angeles, Calif., has been elected chairman of the board of directors of the Portland Cement Association. Mr. Warren has served on the board of directors since 1953 and as a member of the executive committee for the last year. He succeeds Emory M. Ford, chairman of the Huron Portland Cement Company, Detroit, who has served as chairman of the board during the last two years.

Eight new directors were also elected by association members at their annual meeting: W. K. Farst, general manager, Pittsburgh Plate Glass Company, Columbia Cement Division, Zanesville, Ohio; John S. Lind, general manager, St. Mary's Cement Company, Ltd., Toronto, Ont., Canada; Leonard E. Bayer, president, National Cement Company, Birmingham, Ala.; Robert E. Pflaumer, president, Standard Lime & Cement Company, Baltimore; Charles E. Shearer, president, Keystone Portland Cement Company, Philadelphia; Ben W. Calvin, president, Aetna Portland Cement Company, Bay City, Mich.; C. F. Lewis, president and manager, Volunteer Portland Cement Company, Knoxville, Tenn.; and D. A. Symmes, president, Glens Falls Portland Cement Company, Glens Falls, N.Y.

Mr. Warren, the new chairman of the board, has been president of the Southwestern Portland Cement Company since 1949. He joined that firm in 1933 as vice-president and manager in charge of Eastern operations. Prior to 1933 he was assistant general manager of the Portland Cement Association.

Newly elected and retiring chairman of the board of the Portland Cement Association. George E. Warren (left), president, Southwestern Portland Cement Co., Los Angeles, receives congratulations from Emory M. Ford, chairman of Huron Portland Cement Co., Detroit, who has served the association as chairman for the past two years.

Retiring directors are: Charles Horner, president and general manager, Kosmos Portland Cement Company, Louisville, Ky., and F. B. Warren, president, Bessemer Limestone & Cement Company, Youngstown, Ohio. A third retiring member, James H. Ackerman, president, Dragon Cement Company, New York City, resigned, effective November 14.

WILLIAM KING has been appointed sales manager of Atlas Stone, Inc., Holland, Ohio, manufacturer of Highland Stone.

In his new post Mr. King will organize and direct sales of the stone in a five-county area.

Washington News

(*From page* 12)

Republicans seem to be too fearful that the Democrats are really riding on the wave of the future. The Democrats, on the other hand, have their own set of worries. The solid South, which they always had in their pockets, seems to be crumbling. And surprisingly, it seems to be the votes of large numbers of recently enfranchised Negroes which are doing much to break the Democratic monopoly. Even in the North, the big city voters seem to include so many independents that the big city "bosses" are being downgraded to "leaders."

If all of this sounds as though the 1960 campaign has already begun in Washington, that is exactly what has happened.

A. J. BRINCKO, who was formerly assistant district sales manager at Allentown, Pa., for the Lehigh Portland Cement Company, has been named to succeed the late James B. Kennedy as district manager, and will maintain headquarters in Allentown, Pa.

help your HEART FUND help your HEART

By contributing to the Heart Fund, you are helping a cause which may one day help YOU.

A. J. R. Curtis of P.C.A. Industrial Safety Expert Dies After Long Service

Arthur J. R. Curtis, who was for many years in charge of the Accident Prevention Bureau of the Portland Cement Association, died

Arthur J. R. Curtis

on November 10 at the age of 69 years. He retired in 1952.

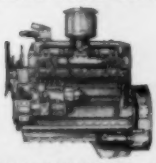
Mr. Curtis joined the association in 1916 as director of extension. In 1926 he was appointed assistant to the general manager of P.C.A., in charge of its Accident Prevention Bureau, and served in this capacity until August, 1951, when he was made assistant secretary and safety consultant. During those years he was responsible for numerous innovations promoting safety in member company mills and quarries, and accident frequency in these plants was reduced by approximately 83 percent, a remarkable record. Recognition of his leadership in this field came in 1947, when he was awarded the Joseph A. Holmes medal of the U. S. Bureau of Mines.

Mr. Curtis was nationally known in industrial safety circles. For 16 years he served as secretary of the Cement Section of the National Safety Council, and for many years was a member of the executive committee and of the board of directors of that organization. He was a member of the President's Conference on Industrial Safety, the Industrial Hygiene Foundation, the American Industrial Hygiene Association, the American Society of Safety Engineers, and a past president of the American Society of Agricultural Engineers.

This is HERCULES MOTORS Today

L-HEAD GASOLINE

OVERHEAD-VALVE GASOLINE


TURBULENCE-CHAMBER DIESEL

DIRECT-INJECTION DIESEL

TURBOCHARGED DIESEL

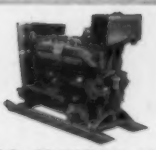
DEPENDABLE POWER FOR INDUSTRY

TRANSPORTATION AGRICULTURE CONSTRUCTION INDUSTRIAL MARINE OILFIELD

Yes, this is Hercules Motors, today—all types of dependable power for modern industry. The Hercules line includes more than 90 different models of engines and complete power units ranging from 3 to 500 H.P.

An ever-growing list of customers are solving their power problems with these types of Hercules Engines: L-head gasoline, overhead-valve gasoline, natural gas, L.P.G., turbulence-chamber diesels, direct-injection diesels, Turbo-Charged Diesels, marine diesels and complete open, closed and base type power units.

Write for more information on any of these dependable power plants. Our sales-engineers will be happy to help solve your power problems. No obligations, of course.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POWER UNITS

MARINE DIESELS

HERCULES MOTORS CORP.

Engine Specialists Since 1915 • Canton, Ohio

KENNEDY 250 TON

PER HOUR SAND AND GRAVEL

PLANT for Otisville Sand & Gravel Co.

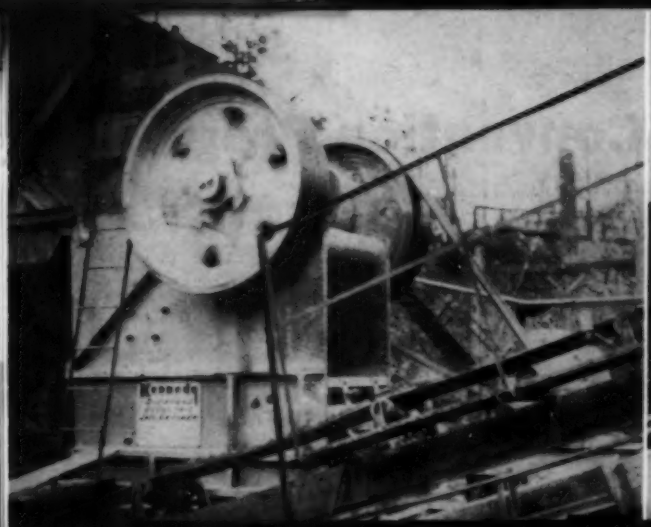
Overall view of the Cuddebackville, N. Y. plant of OTISVILLE SAND & GRAVEL CO. showing arrangement of crushers, screens and conveyors.

Send for Bulletin describing KVS Machinery and Equipment

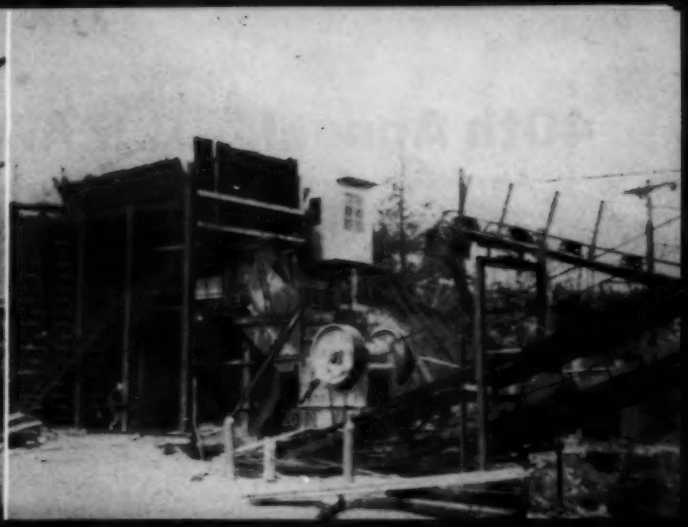
KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVENUE, NEW YORK, N. Y. • FACTORY: DANVILLE, PA.



KVS, 30" x 42" overhead eccentric Jaw Crusher in operation.



KVS 48" x 10' reciprocating plate feeder and 30" x 42" overhead eccentric Jaw Crusher.

Modern KVS, High-Capacity Machinery and Equipment

Produces Uniform, Graded Products at a

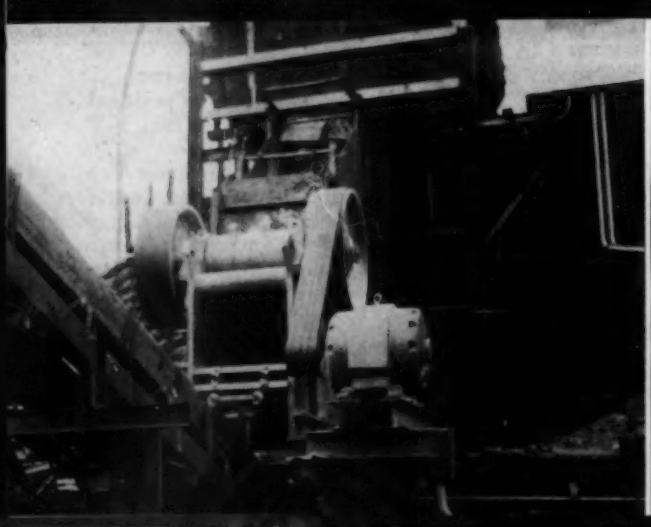
Rated Capacity of 250 Tons Per Hour.

OTISVILLE SAND & GRAVEL CHOSE KENNEDY EQUIPMENT ON A BASIS OF PROVEN PERFORMANCE!

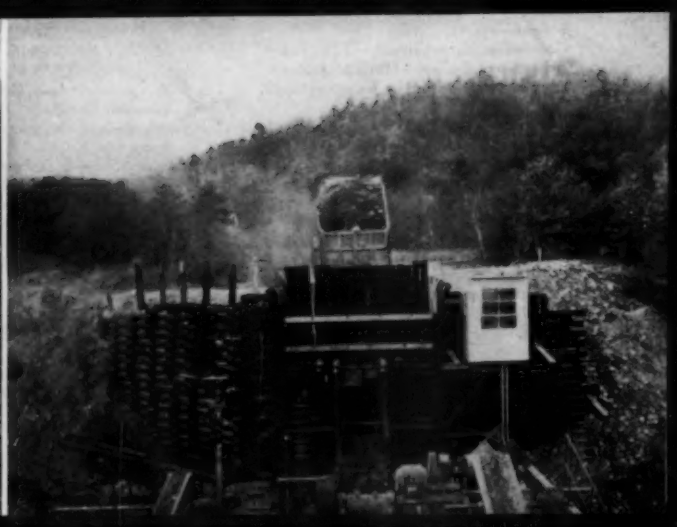
KENNEDY PRODUCTS

- Gyratory Crushers
- Swing Jaw Crushers
- Tube Mills
- Ball & Rod Mills
- Vibrating Screens
- Rock Feeders
- Air Swept Tube Mills
- Rotary Kilns
- Coolers, Dryers
- Preheaters, Deheaters
- Belts, Conveyors
- Pneumatic Transport Systems
- Waste Heat Boilers
- Pulverized Coal Firing Systems
- Steam Generators
- Asbestos Plants
- Complete Lime Plants
- Complete Cement Plants
- Complete Aggregate Processing Plants

KVS 30" x 42" overhead eccentric primary stage Jaw Crusher and feed hopper . . . Otisville Sand & Gravel Co.



KVS 30" x 42" Primary Crusher and feed hopper arrangement, Cuddebackville plant, Otisville Sand & Gravel Co.



40th Annual N.C.S.A. Convention Program

Americana Hotel, Miami Beach, Fla., Jan. 14-17

MONDAY, JANUARY 14

Morning

Meeting of Manufacturers Division Board of Directors

Afternoon

Meeting of N.C.S.A. Board of Directors

TUESDAY, JANUARY 15

Morning Session

Moving Picture
Greetings from the President—N. E. Kelb
Report of Elections by Board of Directors
Report of Executive Director—J. R. Boyd
Report of Engineering Director—J. E. Gray
Address

Greeting Luncheon

Presentation of N.C.S.A. Safety Contest Awards
"World Affairs—A Ringside Seat"—Captain W. C. Mott, Office of the Chairman, Joint Chiefs of Staff, Washington, D. C.

Afternoon

Open for individual plans

Evening

N.C.S.A. Fiesta

Dinner — Entertainment — Dancing

WEDNESDAY, JANUARY 16

Morning Session

Moving Picture
Report of Auditing Committee
Report of Resolutions Committee
"Significant Highlights of the New Percentage Depletion Regulations" — John F. Lane, Gall, Lane and Howe, Washington, D. C., general counsel, N.C.S.A.
"The Growing Danger from Zoning and Performance Standards" — W. P. Foss, III, president, New York Trap Rock Corp., chairman, N.C.S.A. public relations committee
"Guide for Handling Subrogation Problems" W. C. Rowe, treasurer, Rowe Contracting Co., Malden, Mass., chairman N.C.S.A. subrogation committee
Douglas B. Sherwood, assistant general manager, National Board of Fire Underwriters, New York, N. Y.
"Quality Requirements for Materials to be Used Under the New Highway Program" —A. C. Clark, Deputy Commissioner, U. S. Bureau of Public Roads, Washington, D. C.

General Luncheon

"And Greater Highways Than These You Will Travel" — Arthur C. Horrocks, public relations counsel, Goodyear Tire & Rubber Co., Akron, Ohio

Afternoon and Evening

Open for individual plans

THURSDAY, JANUARY 17

Morning session

Operating Men and Equipment Manufacturers
"St. Lawrence Seaway and Power Project"—sound color moving picture
"Quarry Efficiency Standard Record Keeping" — T. C. Cooke, president, Lynn Sand & Stone Co., Swampscott, Mass.
"Measurement of Stone in Storage in Total and by Sizes" — Nelson Severinghaus, vice president and general manager, Consolidated Quarries Corp., Decatur, Ga.
Discussion
"Advantages and Disadvantages of Scalping Between Primary and Secondary Reduction Crushers" — E. Lee Heidenreich Jr., Newburgh, N. Y.
Discussion
"Quality Control in the Production of Aggregates"
Introduction — J. E. Gray, engineering director, National Crushed Stone Association
Panel Discussions
"Stripping for Quality"—John Bratton, Jr., general manager, Superior Stone Co., Raleigh, N. C.
"Crushing for Quality" — L. J. Burriss, chief engineer, Weston & Brooker Co., Columbia, S. C.
"Screening for Quality"—M. Hankin, Jr., executive vice president, North Jersey Quarry Co., Morristown, N. J.
"Rinsing and Washing for Quality — John Cibula, vice president in charge of operations, Bradford Hills Quarry Inc., East Petersburg, Pa.
"Various Methods of Stockpiling and Reclaiming to Maintain Quality" — John Kewaske, general superintendent, Callanan Road Improvement Co., South Bethlehem, N. Y.

Manufacturers Division Luncheon and Annual Business Meeting
(Division Members Only)

Afternoon Session

"Significance to the Stone Producer of Flexural Strength Specifications" — A. T. Goldbeck, engineering consultant, N.C.S.A., Washington, D. C.
"You Can Help End Tax Discrimination" — Walter Koch, president, International Steel Co., Evansville, Ind.
"Significance of Recent Annual Elections—A Washington Preview of What Lies Ahead" — James W. Douthat, assistant vice president, Government Relations Division, National Association of Manufacturers, Washington, D. C.
Report of Accident Prevention Committee
"Improving Management Skills" — Jack Joynt, The American Enka Corp., Enka, N. C.

Evening

Reception and Banquet

"My Experiences . . . or I Should Have Stood in Bed" — Jimmy Swan

12th Annual N.A.L.I. Convention Program

Statler Hotel, Washington, D.C., Jan. 22-23

TUESDAY, JANUARY 22

MORNING SESSION

SOUTH AMERICAN ROOM

Presiding—President Leonard S. Fry
Registration—Foyer of SOUTH AMERICAN ROOM
9:00 a.m.—Movie—"Living Rock"—Georgia Extension Service
9:30 a.m.—Call to order and welcome by the president
Reading of minutes of previous meeting
Treasurer's report—J. B. Mount
Committee reports by chairmen:
By-laws—W. H. Litteer
Convention Arrangements—L. R. Falk
Finance and Budget—Floyd H. Millen
Legislative and Public Relations — W. O. Faylor
Membership—William E. Stone
Percentage Depletion—Sam Davis Bell
Promotion and Education—Lynn N. Stewart
Resolutions—M. R. Ackland
State Associations—Russell W. Hunt
Region I—John M. Deely Sr.
Region II—Robert M. Bridges
Region III—Burt F. Taylor
Region IV—W. L. Bryan
Region V—E. B. Snead
Old Business
New Business
11:00 a.m.—Discussion of problems indicated on the basis of regional committee reports

GREETING LUNCHEON—12:30 p.m.

FEDERAL ROOM

Presiding—Robert M. Patton
"The Future of Our Industry"—by Robert M. Koch, executive secretary, N.A.L.I.

AFTERNOON SESSION—2:30 p.m.

SOUTH AMERICAN ROOM

Panel on Operations — Robert M. Patton, Charles Rich, William J. Clark, W. L. Bryan, Arthur R. Alvis, and John M. Deely Sr.

MANUFACTURERS' DIVISION—GUEST NIGHT

PRESIDENTIAL BALLROOM—6 p.m.

Buffet Dinner—Dance

WEDNESDAY, JANUARY 23

MORNING SESSION

FEDERAL ROOM

9:00 a.m.—Movie—"Green Dollars"—Illinois Extension Service
Panel on Conservation—Presiding chairman, Robert M. Koch
Participating—E. L. Peterson, C. M. Ferguson, Paul M. Kroger, H. J. Doggett, D. A. Williams, and H. L. Manwaring

LUNCHEON—12:30 p.m.

CONGRESSIONAL ROOM

Presiding — Russell W. Hunt, N.A.L.I. vice-president
"The Safety Valve of Sanity"—by Ernest R. Rosse

AFTERNOON SESSION—2:30 p.m.

FEDERAL ROOM

Panel on Promotion—Co-chairmen: R. B. McNab and L. R. Stewart
Participating—W. D. Fyock, Lowell E. Glendening, R. N. Stewart, and William E. Stone
"Status Quo or No"—by B. T. Abbott

MANUFACTURERS' DIVISION MEETING

CALIFORNIA ROOM—2:30 p.m.

Chairman—Jules E. Jenkins
Secretary—W. H. Van Buren

EVENING

CONGRESSIONAL ROOM

6:00 p.m.—Reception

PRESIDENTIAL BALLROOM

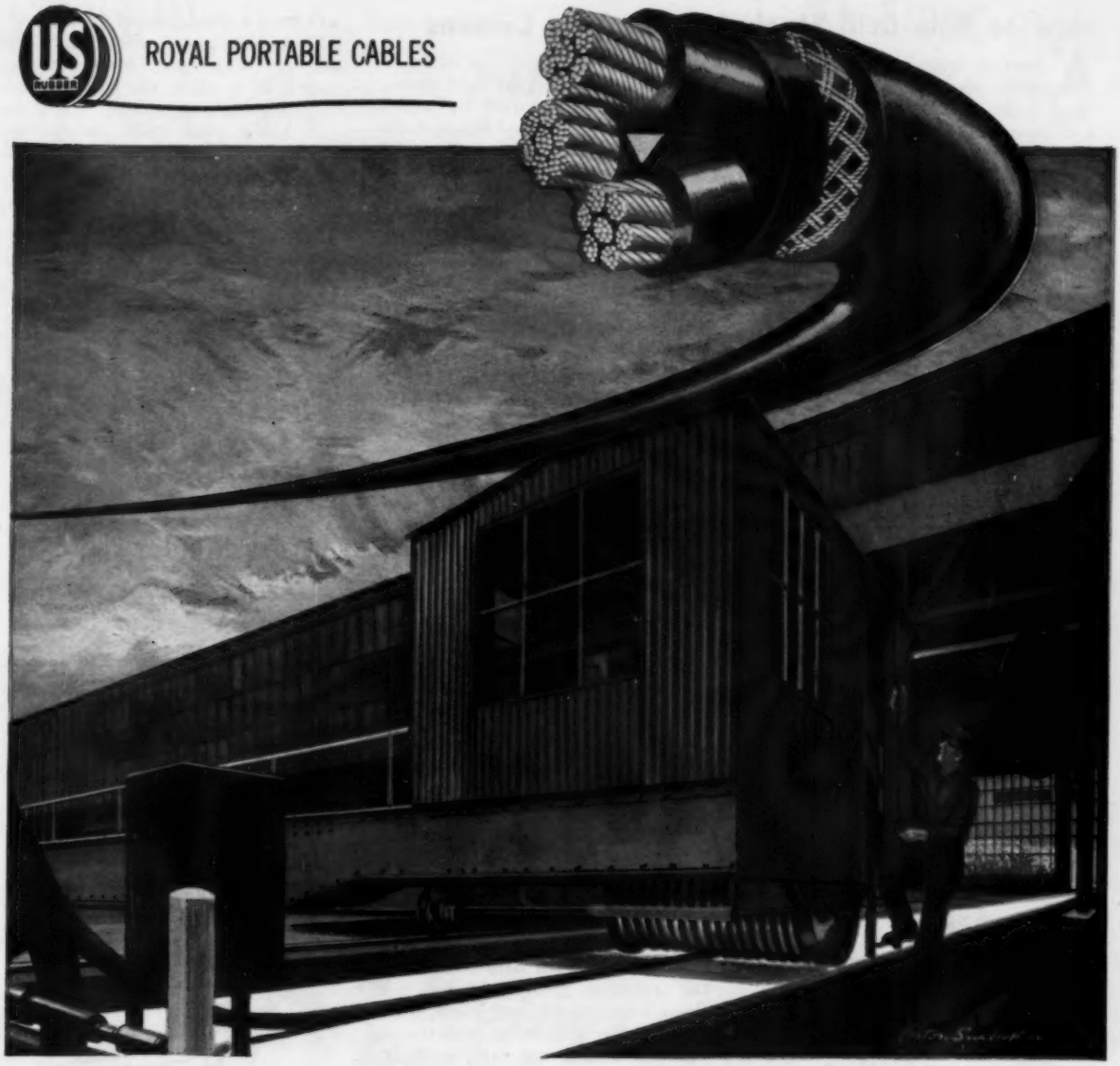
7:00 p.m.—Annual Banquet
Presiding—President L. S. Fry
"Saving Nature Serves Humanity"—by Karl E. Mundt, U. S. Senator, South Dakota

Bituminous Concrete Assn. Of N. Y. Elects Munz President

Clarence A. Munz of Utica, N.Y., has been elected president of the New York State Bituminous Concrete Producers Association, Inc. He succeeds Louis Mayersohn of Albany.

Other officers, installed at a recent meeting in the DeWitt Clinton Hotel at Albany, are as follows: vice-president, William F. Kennedy; treasurer, Avery L. Bullen; and executive secretary, Matthew L. Fitzgerald.

ROYAL PORTABLE CABLES



Still in Service after 29 years, 24 hours a day

and without a single splice, patch or power failure!

This amazing record was made by a 175-foot length of U. S. Royal portable cable installed in 1927 as a source of power for a traveling agitator in a cement plant*. This three-conductor cable has been fully exposed to weather for the entire 29 years. The agitator moves back and forth the length of the slurry basin, and the cable is simultaneously taken up and paid out by a revolving drum.

To "U. S." engineers, performances such as this are not too unusual. They stem, right at the start, from the determination of "U. S." technicians to produce only a *quality* product. This is possible because "U. S." is the only wire manufacturer to grow its own natural rubber, make its own synthetic rubber and its own plastics, assuring complete quality control with the help of unmatched research and manufacturing facilities.

Call on the "U. S." wire and cable specialist to solve any wiring problem. Write United States Rubber Company, Rockefeller Center, New York 20, N. Y.

*Penn-Dixie Cement Corp., Tenn.

Watch NCAA football, Saturday afternoons, NBC-TV

Electrical Wire & Cable Department

United States Rubber

How to Ruin Drill Steels in Nine Easy Lessons

A leading manufacturer of rock drills and other pneumatic equipment for mining, quarrying, and construction work stated recently there are scores of ways to ruin good drill steels, but picked out nine that do the job fastest and "best."

According to spokesmen of Atlas Copco, exclusive distributor of Sandvik Coromant integral drill steels, these methods—reported by representatives in the United States, Canada, and 85 other countries around the world—are the leading causes of premature drill steel failure:

1. Storing steels in the open. Rain, snow, and normal dampness will rust both the exterior and center hole of a steel, leaving a rough surface particularly susceptible to metal fatigue.

2. Handling steels roughly during transportation. Deep scratches on the outer surface quickly become major structural weaknesses. (For identification purposes, stamp a number into a steel. This makes it easy to find and insures extra speedy breakage.)

3. Forgetting to regrind the steel. That tough tungsten carbide insert will lose its original cutting potential and then the rock drill will damage the rod instead of the rock. You'll crush the insert.

4. Ignoring instructions for grinding steels. Grind the bit just as sharply as you can. Then, while it's still hot, dip it into a bucket of cold water. This is always good for a laugh—and early breakage.

5. Running your drill with too little pressure on the steel. This will make the drill jump on the steel's collar and keep the piston from hitting the steel. It develops particularly high stresses on the rod.

6. Using the pusher with too much force. This helps bend the drill steel, making it break early in the game.

7. Using a rock drill with worn-out rotation device. If the steel doesn't rotate with each blow, it will suffer heavy stresses on both the rod and bit. This means early breakage.

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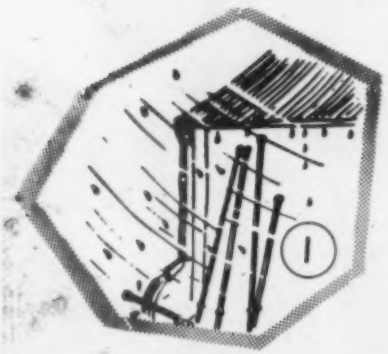

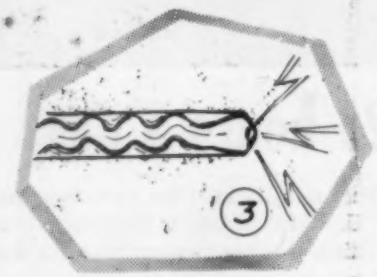

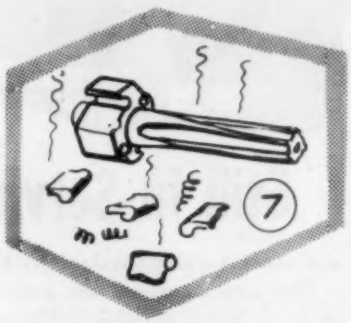

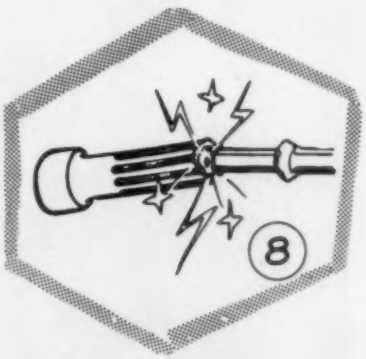

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Will New Roads Save Live

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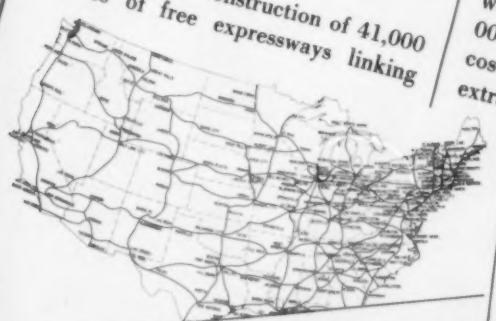

practically every large city and state capital in the nation. The building will take 13 years and cost $32,900,000,000. But the huge program will cost the average driver extra

GIANT ROAD BILL SIGNED

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victim
roads
Rc

IKE APPROVES BILLIONS FOR NEW HIGHWAYS

Georgia's Share of Highway Funds Over $800 Million

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How to Ruin Drill Steels in Nine Easy Lessons

A leading manufacturer of rock drills and other pneumatic equipment for mining, quarrying, and construction work stated recently there are scores of ways to ruin good drill steels, but picked out nine that do the job fastest and "best."

According to spokesmen of Atlas Copco, exclusive distributor of Sandvik Coromant integral drill steels, these methods—reported by representatives in the United States, Canada, and 85 other countries around the world—are the leading causes of premature drill steel failure:

1. Storing steels in the open. Rain, snow, and normal dampness will rust both the exterior and center hole of a steel, leaving a rough surface particularly susceptible to metal fatigue.

2. Handling steels roughly during transportation. Deep scratches on the outer surface quickly become major structural weaknesses. (For identification purposes, stamp a number into a steel. This makes it easy to find and insures extra speedy breakage.)

3. Forgetting to regrind the steel. That tough tungsten carbide insert will lose its original cutting potential and then the rock drill will damage the rod instead of the rock. You'll crush the insert.

4. Ignoring instructions for grinding steels. Grind the bit just as sharply as you can. Then, while it's still hot, dip it into a bucket of cold water. This is always good for a laugh—and early breakage.

5. Running your drill with too little pressure on the steel. This will make the drill jump on the steel's collar and keep the piston from hitting the steel. It develops particularly high stresses on the rod.

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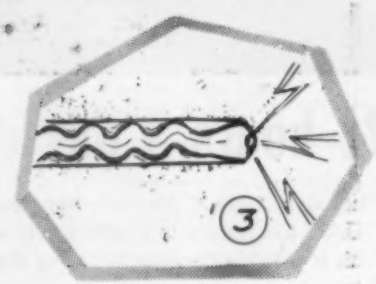

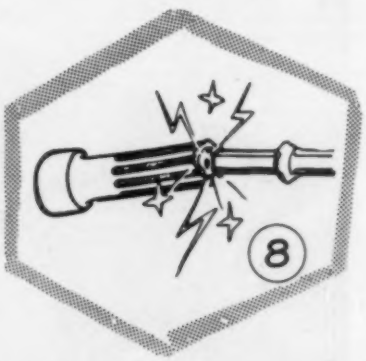

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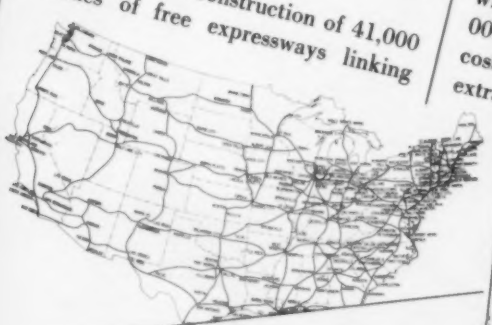

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November, 1953 | January, 1954 | February, 1954 | May, 1954 | June, 1954

Early in 1949, Caterpillar Tractor Co. began a series of full-page 4-color advertisements in *The Saturday Evening Post* and other national magazines. These pages were designed to forcefully awaken the public to the frightful toll of lives and money taken yearly by inadequate roads.

The 40 advertisements, reproduced in miniature above, give some idea of

January, 1955

February, 1955

March, 1955

April, 1955

May, 1955

July, 1955

September, 1955

October, 1955

November, 1955

December, 1955

January, 1956

February, 1956

March, 1956

April, 1956

May, 1956

June, 1956

July, 1956

August, 1956

September, 1956

October, 1956

the continuing impact carried by this campaign. In the last two years emphasis has been changed to show how various states are meeting the highway problem.

With a strong awareness of highway needs now in the public mind, the new Federal Interstate Highway Program has been enacted into law. The next two pages show a breakdown of probable highway expenditures by states.

Ala. $730,800,000

Ariz. $424,200,000

Ark. $529,000,000

Cal. $2,019,600,000

THE NEW INTERSTATE HIGHWAY SYSTEM AND PROPOSED FEDERAL AID TO STATES

These are the estimated Federal grants to states for the next 13 years, to be used for both the Interstate Highway System and other Federal-Aid roads.

These figures represent 90% of the cost for the Interstate System, 50% for the remainder.

Minn. $829,600,000

Nev. $371,100,000

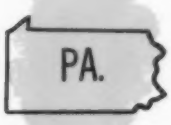
N.H. $204,800,000

N.J. $753,900,000

N.M. $450,700,000

Okla. $661,200,000

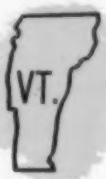
Ore. $507,900,000



Pa. $1,865,800,000

R.I. $216,400,000

Utah $351,900,000



Vt. $201,200,000

Va. $718,400,000

Wash. $582,000,000

Col. $518,300,000

Conn. $342,500,000

Del. $202,200,000

Fla. $608,400,000

Ga. $838,700,000

Idaho $364,300,000

Ill. $1,668,500,000

Ind. $872,100,000

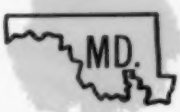
Iowa $751,300,000

Kan. $683,300,000

Ky. $666,900,000

La. $588,500,000

Me. $284,400,000



Md. $418,700,000

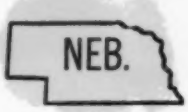
Mass. $735,700,000

Mich. $1,277,600,000

Miss. $574,000,000

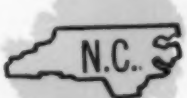
Mo. $986,400,000

Mont. $539,000,000

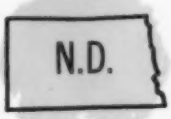


Neb. $544,100,000

N.Y. $2,469,500,000



N.C. $903,500,000



N.D. $406,900,000

Ohio $1,509,300,000

S.C. $476,900,000

S.D. $427,700,000

Tenn. $766,800,000

Texas $2,112,500,000

W.Va. $418,200,000

Wisc. $822,600,000

Wyo. $369,900,000

D.C. $220,900,000

CATERPILLAR—
your partner in earthmoving progress—
has the equipment ready for the big job

The mighty D9, with 320 Turbocharged engine HP and No. 9S Loadshape Bulldozer, heads the line of six Caterpillar crawler Tractors. The other machines, with engine HP, are: D8—191 HP, D7—128 HP, D6—93 HP, D4—63 HP, and D2—48 HP.

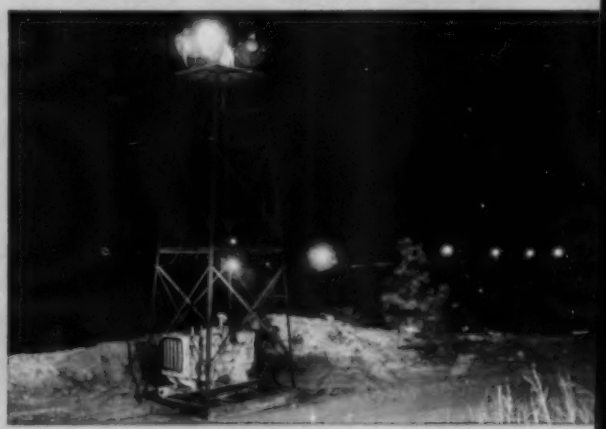
The Turbocharged 300 HP DW21 with the 25 cu. yd. (heaped) capacity No. 470 LOWBOWL Scraper provides a fast, highly maneuverable earthmoving unit.

The No. 977 Traxcavator of 2¼ cu. yd. bucket capacity is the largest of the three Cat-built tractor-shovels. The No. 955 has a 1½ cu. yd. bucket; the No. 933, a 1 cu. yd. bucket. Lift forks and other attachments give added versatility to these highly productive units.

The No. 8 Ripper, for use with the D8 Tractor, is one of a line of five Cat-built tractor-mounted rippers. In addition to the No. 8, they are: the No. 9, the No. 6, the No. 4 and the No. 2 for use with other Caterpillar-built Tractors and Traxcavators.

The four-wheel DW20, with Turbocharged 300 HP Cat Engine, teams up with the LOWBOWL No. 456 Scraper (25 cu. yd. capacity) for high-speed earthmoving on longer hauls. The four-wheel 186 HP DW15 works with the No. 15 Scraper (12½ cu. yd. capacity).

Representative of the Cat four-wheel, crawler-drawn Scraper line is the No. 463. Heaped capacities are: No. 90, 27 cu. yd.; No. 463, 25 cu. yd.; No. 70, 15 cu. yd.; No. 60, 9 cu. yd.; and No. 40, 4.5 cu. yd.



Caterpillar Electric Sets are available in eight basic models ranging from 30 to 350 KW. Available in portable units, they are a reliable and convenient source of electric power.

Nine basic sizes, from 65 to 650 HP, make up the line of Caterpillar Diesel Engines. They are used by over 100 manufacturers to power excavators, compressors, crushers and other construction machines.

Heading the line of three Cat Motor Graders is the 115 HP No. 12. The No. 112 has 75 HP; the No. 212 has 50 HP.

N. J. GIRDS TO PUSH ROAD CONSTRUCTION

Highways Officials and Senators Confer on Possible One-Cent Gas Tax Rise

Trenton, June 29. The ex- | tion, according to state high- | a 90-10 basis for interstate
way program, | way officials here. New Jersey | roads, and one-third on a 50-50
will receive over a billion dol- | basis to finance primary, sec
ondary and urban roads. Th

41,000 Miles of Super-Highways New Federal Bill

Next year—and the years ahead—offer you the greatest challenge in the whole history of construction. The highway work alone will dwarf any previous undertaking.

Caterpillar has been preparing for this time. Plant capacity has been doubled and is still expanding. New and improved products are now in full production, giving you equipment designed and built to do more work, faster, at lower cost. When you bid on a contract, that kind of equipment can make the difference between profit and loss.

Caterpillar leadership is leadership *in action*. It never stands still. The full resources of Caterpillar research, both in the laboratory and right in the field with you, are constantly devoted to the development of even more efficient engines and earthmovers—equipment that keeps pace with your increasing opportunities.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar, Cat and Trancavator are Registered Trademarks of Caterpillar Tractor Co.

YOUR PARTNER IN EARTHMOVING PROGRESS

STATE TO GET $230 MILLION IN FEDERAL FUNDS BY 1959

Illinois Total Over $1½ Billion for 13-Year Highway Building Era

Washington, D. C., July 3. Estimates released by the U. S. Bureau of Public Roads call for $229,700,000 of Federal funds to be spent in Illinois in three years, starting July 1, 1956.

This represents 90 per cent of Interstate road construction costs. The state will furnish the additional 10 per cent. For the full 13-year period covered by the Federal Highway bill it is estimated Illinois will receive nearly $1,700,000,000.

41,000 MILES OF HIGHWAYS APPROVED BY PRESIDENT

Washington, D. C., June 29—You're going to get 41,000 miles of new four, six and eight lane highways in the next 13 years.

It became official today when President Eisenhower signed the Federal Interstate Highway bill. Under the new law, the Federal government will spend $32,900,000,000 through 1969 for the new roads.

The bill calls for a vast network of free superhighways linking most major cities and state capitals.

HIGHWAY BILL BOON TO UTAH ROAD SYSTEM

Salt Lake City, July 3—Over-all spending in Utah for highways in the next three years will rise from $25.2 million to $88.6 million. And for the succeeding 10-year period it will continue in the $75 to $95 million bracket.

This will result from the new 13-year road building program signed into law by President Eisenhower. By 1970 Utah will be criss-crossed by splendid four and six lane divided highways.

The state now has some 700 miles of interstate highways and the bill provides for a rebuilding of an amount equal to this mileage.

$32.9 Billion Highway Bill a Bargain for Car Owner

New Taxes on Gas, Tires to Cost Average Driver Only $8.60 per Year

Washington, D.C., July 2. The Federal Highway Aid bill, which has been high on the President's list of must legislation, is now law. As high- have pointed

It is a pay-as-you-go program. But the $33 billion total, to be paid for by a 1-cent increase in the gasoline tax, 3 cents a pound for tires and a 2 per cent rise in the price of trucks, buses and trailers, will result in safer, more economical driving. The average car owner will pay only $8.60 a year, and should save much that in fuel, time,

Mills, 5th Kiln, Cooler To Be Added in Expansion Of S. Dakota Cement Plant

According to an announcement released by the South Dakota Cement Commission, the facilities of the state's cement plant at Rapid City will be expanded by the construction of a fifth kiln. It was indicated that the cost of the project will be approximately $800,000.

The proposed expansion will include, in addition to the kiln, two grinding mills, a clinker cooler, several large motors, conveyors, an instrument panel, and related equipment.

Last January the commission transferred $1,000,000 from cement plant funds to the state's general fund. Previously the plant had turned over $1,252,000 to the state—$502,000 in 1954 and $750,000 in 1955. Before the end of the year the commission will probably transfer another $1,250,000. This will make a total of $3,502,000 in profits accruing to the state from the cement plant.

$8,000,000 Facility Opened By Canadian Cement Concern

The $8,000,000 plant of the Saskatchewan Cement Corporation Ltd. at Regina, Sask., has begun production with an annual capacity of 3,400,000 bags of cement. This plant produces four distinct types of cement under its trade name, "Buffalo Brand."

Raw crushed stone and clinker are stored in a clinker building 83 ft. wide by 400 ft. long and 84 ft. high. Other structures include a 280-ft. kiln; a 150,000-gal. oil storage tank; and three blend silo tanks, each having a capacity of 24,000 cu. ft.

Officers of the concern are G. R. Whitmore, Regina, chairman of the board; R. D. Welch, Vancouver, president; and J. W. Sharp, vice-president and general manager.

Fir-Tex Insulating Board, Inc. Purchased by Kaiser Gypsum

Kaiser Gypsum Company, Inc., Oakland, Calif., wholly-owned subsidiary of the Permanente Cement Company, has purchased the physical assets of Fir-Tex Insulating Board, Inc., in a multimillion-dollar transaction.

The acquisition includes the principal Fir-Tex plant at St. Helens, Oreg., which manufactures a full line of insulation board products; more than 16,000 acres of timber land in Oregon and Washington; and Western Insulated Products, Inc., a wholly-owned subsidiary.

According to Claude E. Harper, vice-president and general manager of Kaiser Gypsum, Fir-Tex will become the Insulating Board Division of Kaiser Gypsum.

Work on C. Girardeau Plant Of Marquette Nearly Finished

According to reports from Cape Girardeau, Mo., scene of the Marquette Cement Manufacturing Company's $7,000,000 plant, completion of the sprawling facilities is in sight. It was indicated that the numerous buildings are being connected by piping and conveyor systems.

Finished cement will be carried by means of one of the conveyor systems from the plant to silos constructed on the banks of the Mississippi River. Here the cement will be loaded on barges for transport on the river.

Installation of equipment in several buildings is also under way. Structures housing the raw and finished grinding mill and the hoppers have been brought to an advanced stage, and corrugated siding is being placed at this time.

Already completed are the structural steel work for the burner building and kiln feed building, the group of ten silos, the river silos, blending and slurry tanks, and the clay slip feed tanks.

Production of finished cement at the Inland Cement Company, Ltd., Edmonton, Alta., Canada, has now passed the 1,000,000 bbl. per year mark. Plant expansions, designed to double the capacity of the existing plant, are expected to be completed by January 1, 1957.

Diamond Alkali to Enlarge Cement-Coke Div. in Ohio—Other Expansions Planned

John A. Sargent, president of the Diamond Alkali Company, Cleveland, Ohio, recently announced plans for a long-range expansion program which will cost from $60,000,000 to $80,000,000.

Included in the program is the expansion of the Standard Portland Cement Company, Painesville, Ohio, Diamond Alkali's cement-coke division. An additional 1,000,000 bbl. will increase its annual cement capacity to 3,000,000 bbl. This project will be completed by next spring.

Other major expenditures are for a projected acetylene plant based on natural gas to be built in Houston, Tex., and the doubling of capacity of the perchlorethylene plant and the polyvinyl chloride resin plant.

Mr. Sargent also announced several new advances in various stages of development at the Diamond Research Center in Painesville.

Arizona Research Consultants, Inc., has completed a report for the Arizona Development Board on several diatomaceous earth deposits in Arizona. Free copies may be obtained by writing to the Arizona Development Board, 1521 W. Jefferson, Phoenix, Ariz.

Stanton Walker, director of engineering, National Sand and Gravel Association, Washington, D. C., has been named chairman of the advisory council of the Maryland Joint Highway Research program.

Leslie S. Voltz

Consumers Co. Safety Dept. Headed by Leslie S. Voltz

In an effort to promote safe operations in all of its plants and reduce accidents to the minimum, Consumers Company of Chicago has established a new department of safety under the supervision of Leslie S. Voltz, who will be assisted by William E. Jagen.

Mr. Voltz has long been associated with mining operations, safety controls, and mine rescue work, having been associated with Peabody Coal Company and Franklin County Coal Corporation.

As director of safety for Consumers Company, he will inspect all mechanical operations at quarries, pits, and local yards; he will instruct superintendents, foremen, and plant managers in accident prevention; and install safety methods and devices wherever these are needed.

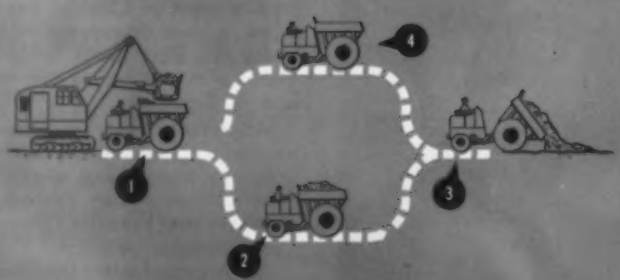
amount equal to this mileage.

which
President's list of
lation, is now law. As high-
have pointed

owner will pay
year, and should save much
that in fuel, time,
and

On this Dumptor shuttle operation, it's an up-hill haul all the way from floor of pit to top of ramp. The other half of this big production team is a Koehring 1½-yard 605 shovel.

HOW TO *haul without turning*



1 Dumptor gets load, body forward, ready to travel.

2 Pulls away from shovel, body forward, ready to dump.

3 Dumps in one second, shuttles back for next load.

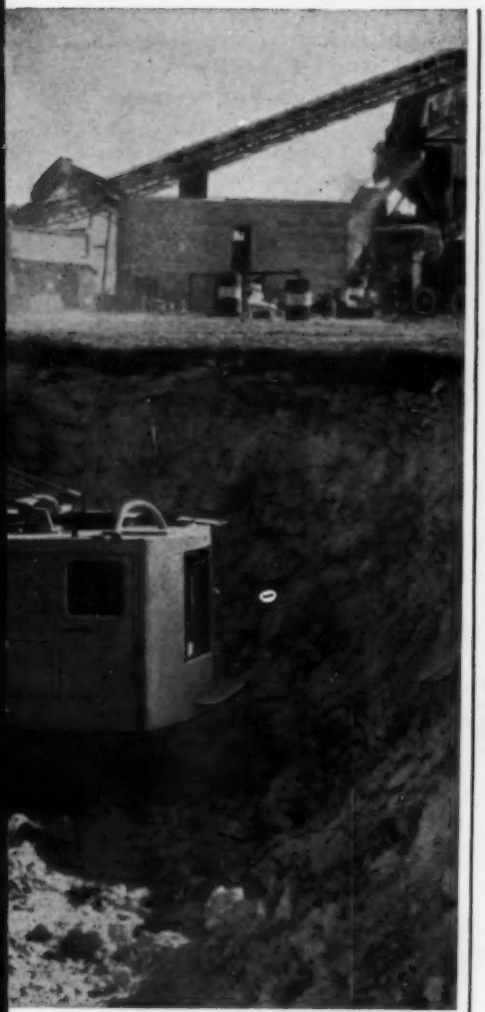
4 Returns to shovel in high gear, *all without turning.*

Shuttling between loading unit and dump area, Koehring 6-yard Dumptor travels round-trip *without turning*. It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

Increases hourly output over 10%

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical 1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return,

CX643



its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

Dumps in one second

Gravity-dumping cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard load in *one second*. Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor® advantages can mean in increased production and lower costs on your work. Call your Koehring distributor now.

KOEHRING COMPANY

MILWAUKEE 16 WISCONSIN

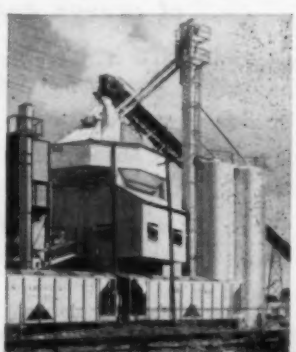
Subsidiaries: JOHNSON PARSONS KWIK-MIX

"Repeater" automatically re-batches any mix selection

At the turn of a dial and push of a button, this Johnson automatic Batch Controller selects any one of 120 different size and type batches of aggregates and cement. It weighs out any combination of materials you set up on the central dial-scale control panel . . . and automatically repeats any batch selections for a pre-determined number of times.

The electric-control, 120-mix-selector panel provides for concrete of various strengths in any combination of materials, in ½ to 2 cubic yard batches. For each size batch there are individual selections for 3 to 6-inch slumps. Dial system makes it easy to change from one mix selection to another. To get any size or type of batch, operator merely turns the selector dial, sets the "repeater", pushes the "start" button . . . and the plant weighs out fast, with pinpoint accuracy. During the batching cycle, a lock prevents accidental change of the mix selector.

Nine material weigh-dials on the control panel have individual pen-recorders. Exact weight of each batch is automatically graph-recorded. Johnson transit-mix plant shown here has: six 5000-lb. aggregate batchers (two with automatic moisture-compensators) . . . a 3000-lb. cement batcher with dual fill valves for selecting 2 types of cement . . . a 2000-lb. water weigh-batcher, and a 5-lb. (80-oz.) air entraining admix batcher. All are fully automatic.



Whenever you plan a new plant . . . or want to modernize an existing set-up, look into the increased efficiency you can get with Johnson equipment. You'll find your Johnson distributor is at your service . . . ready to help at any time.

T9

C. S. JOHNSON CO. CHAMPAIGN, ILLINOIS
Koehring Subsidiary

SYNTRON

VIBRATING SCREENS

Syntron designs and builds screens for practically every screening application in many industries — mining, chemical, food, etc. Replaceable screening surfaces from 80 mesh to ¾" openings.

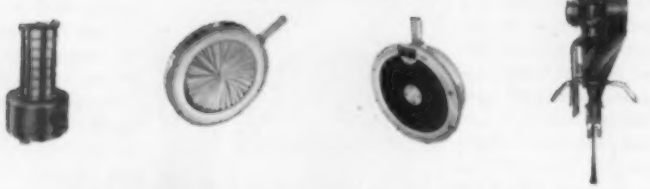
PULSATING MAGNET SCREENS—provide effective low cost sizing of medium tonnage materials.

GRIZZLY BAR SCREENS—increase efficiency of any operation requiring scalping or coarse screening of heavy tonnage materials.

SCREENING FEEDERS—utilize, powerful electromagnetic drive to size, dewater, desludge, desilt, dedust bulk materials. Screens up to 3" materials size.

Other SYNTRON EQUIPMENT
of proven dependable Quality

TEST SIEVE SHAKERS | FLOW CONTROL VALVE | HOPPER LEVEL SWITCH | ROCK DRILLS



Write today for complete catalogue—FREE

SYNTRON COMPANY
385 Carson Avenue Homer City. Penna.

C.I.M.A. Announces Election Of Robert P. McKenrick As Executive V.-President

Robert P. McKenrick of the Blaw-Knox Company has been elected executive vice-president of the Construction Industry Manufacturers Association.

Mr. McKenrick began his career in the construction industry as a construction engineer with the Pennsylvania Department of Highways. In 1927 he became a service engineer with the Construction Equipment Department of the Blaw-Knox Company at Pittsburgh, and has served the company for the last 29 years in many capacities. In 1956 he was made vice-president and general manager of the Construction Division at Mattoon, Ill.

R. P. McKenrick

During his years of active participation in national association work Mr. McKenrick has served as chairman of the Manufacturers Division and on the board of directors of the National Sand and Gravel Association. In addition, he has been an active member of the Truck Mixer Manufacturers Bureau, the National Concrete Masonry Association, the American Concrete Institute, and the Industry Round Table of the Associated Equipment Distributors.

With the recent completion of its 300-ft. rotary kiln, the Texas Portland Cement Company's plant located at Echo, Tex., near Orange, went into operation. The new plant is described by Kent B. Diehl Sr., president, as "the most modern cement plant in the world." The new installation will be supplying cement in quantity to users before January 1, 1957.

You get more Work-ability with "Eucs" in Mines and Quarries

Rear-Dump "Eucs" fit any operation . . . 10, 15, 22, 34 and 50 ton capacities.

Rear-Dump Euclids are built for long life on the toughest jobs. Their simple, rugged construction pays off in less down time for servicing and repairs . . . more work-ability day after day . . . as proved on hundreds of mine, quarry and industrial operations for over twenty years.

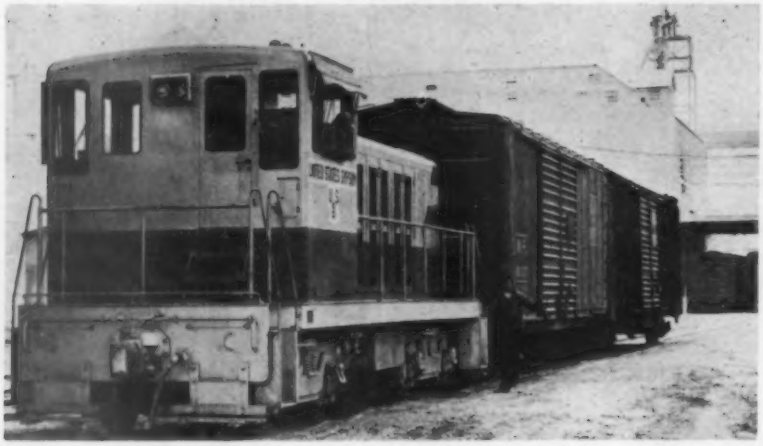
There are 5 models with rated payload capacities of 10, 15, 22, 34 and 50 tons. Engines from 128 to a total of 600 h.p. . . . top speeds with full payload up to 36 m.p.h. . . . 5 and 10 speed standard transmission or Torq-matic Drive . . . semi-rigid or spring mounted drive axle . . . standard or quarry type bodies.

Compare Rear-Dump Euclid performance with your present equipment before you replace or add to your hauling fleet. Your Euclid dealer has helpful facts and figures that show how "Eucs" can cut mine and quarry hauling costs and why ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



• Making two trips a day, this General Electric 70-ton switcher hauls finished wallboard, plaster, and gypsum rock 5½ miles from U. S. Gypsum's plant at Empire, Nev., to Gerlach, Nev., for rail transportation. Last year 1,556,080 net ton miles were hauled.

Marquette Cement Prices Increased at Four Plants

Marquette Cement Manufacturing Company has announced a price increase amounting to 15 cents, or just under 5 percent, to be effective January 1, 1957, on all types of portland cement shipped from its plants at Des Moines, Memphis, Cape Girardeau, and Superior.

In making the announcement, S. L. Cribari, vice-president in charge of sales, stated that the increase is necessitated by higher costs since January 1, 1956.

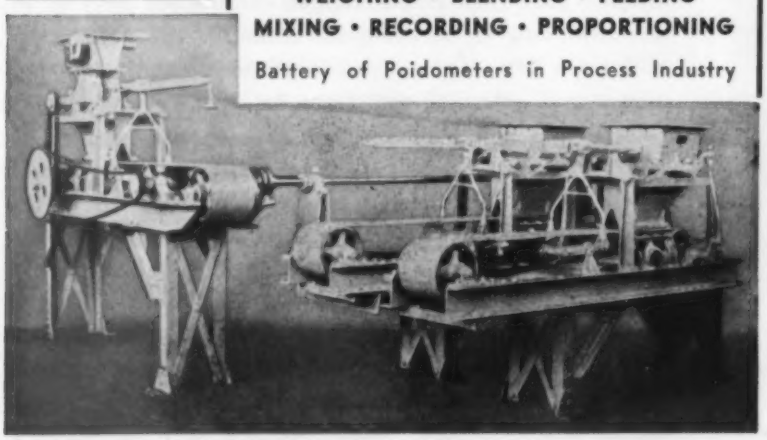
Cement sold by two Marquette subsidiaries, Hawkeye-Marquette Cement Company and Superior-Marquette Cement Company, are also involved in this increase.

HIGH SPEED
ACCURATE
AUTOMATIC

SCHAFFER Poidometers

Modern, All-Purpose Scales for
WEIGHING • BLENDING • FEEDING
MIXING • RECORDING • PROPORTIONING

Battery of Poidometers in Process Industry



Profits dwindle when there is a tie-up in the weighing department of any plant.

Many producers of bulk materials rely on SCHAFFER Poidometers to "keep the job moving," and to maintain product uniformity.

These scales are unexcelled for operating efficiency — they're also easily installed, durable, and show high working and maintenance economies.

Available with remote control weighing and recording devices, and total weight recorders.

OVER 1400
now serving
Industry

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2828 Smallman St. • Pittsburgh 22, Pa.

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CATALOG No. 5

Construction Awards Rise To Set October Record— 10-Month Total Higher

Heavy construction contract awards in October reportedly rose to the second-highest weekly rate of the year, surpassed only by March. Moreover, October awards set a new high for the month, on a weekly average basis.

The total for all types of heavy construction last month was $1,900,000,000, up 27 percent over September and 23 percent ahead of October, 1955. The heavy October volume helped to push the 10-month total to $18,400,000,000, a new record. The total was 17 percent above the comparable January-through-October period in 1955.

Highway contracts broke all records in October on a weekly basis as states and municipalities pushed ahead with their roadbuilding programs.

With only two exceptions, commercial building and private bridges, all types of heavy construction had larger contract totals in October than in September. And, only mass housing and private bridge projects failed to surpass the October, 1955, figures.

Private mass housing contracts of $446,000,000 topped all classes of work in October. The 10-month housing total of $4,700,000,000 is still the biggest single category in the construction field, despite the 11 percent drop in dollar volume from last year.

Industrial building ranked second to mass housing in October in value of contracts. The total for the month was $377,000,000, or 5 percent ahead of September and 31 percent ahead of October, 1955.

Universal's Grinding Plant At Milwaukee in Production

Production was launched on October 11 at the Milwaukee, Wis., plant of the Universal Atlas Cement Company, an operation which is expected to produce approximately 1,500,000 bbl. of cement annually. A major expansion project involved the addition of grinding facilities to the original distributing plant.

The expansion was accomplished by enlarging the storage and packing plant of the Universal Atlas Cement grinding equipment. Universal's Buffington plant at Gary, Ind., supplies the clinker.

WILLIAM SMITH ZIEGLER has been appointed executive vice-president of the Inland Cement Company, Ltd., Edmonton, Alta., Canada.

The Universal 293QS on a road construction site west of Tremonton, Utah, 1955.

The Universal 293QS TwinDual Gravel King has

"Increased our pay load by 33⅓%, lowered operating costs 10c per ton"

Says Jed R. Abbott of Germer, Abbott & Waldron Construction Company, Tremonton, Utah

Abbott's company saved $20,000 on its first large order for aggregate produced by the Universal 293QS.

"After turning out 200,000 tons of material for U.S. Highway 91 last year," said Abbott, "this is the most economical plant we've ever operated. Our payload is a third more and our costs were ten cents a ton less than with other crushing equipment.

More than a gravel producer

The 293QS is the most versatile machine on the market—two plants in one! Inquire how you can convert it quickly from gravel to crushed stone production and back again.

"On the Highway 91 job, it took three D-8 Cat dozers and a scraper to feed the 293QS. The plant we were using before required only one D-8. That'll give you an idea of the difference in capacity."

You'll have a story to be proud of, too, when you work with the Universal 293QS. Producers are enthusiastic about the ability of this plant to make up for lost time. As Jed Abbott puts it, "The severity of Utah weather could mean the loss of much production, but with the Universal 293QS we have the capacity to fill larger orders, fill them faster, charge less and make more money in the long run."

Nearly everyone, like Germer, Abbott and Waldron, goes through seasonal or other costly shut-downs. Costly, that is, unless like Germer, Abbott & Waldron, you've discovered crushing equipment like the Universal 293QS — designed to recapture time lost — at a profit!

Volume production through improved design

Finished material on final belt. Exclusive Universal TwinDual roll crusher permits up to 100% wider discharge opening of the extra-large primary jaw crusher. Jaw efficiency increased by pre-screening pit-run material before entering crusher.

Write for complete facts on the Universal 293QS Gravel King now.

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue, N.W., Cedar Rapids, Iowa

Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois

Industrial Asphalt to Add Four New Facilities To Chain of 17 Plants

Industrial Asphalt, Los Angeles, reportedly the world's largest commercial producer of asphalt, operating 17 plants, has recently signed a new contract calling for delivery of four more asphalt plants. The new order, largest ever placed for this type of equipment, amounts to an investment of more than $600,000, according to Wallace E. Hunt, president of Industrial Asphalt. Standard Steel Corporation, Los Angeles, will supply the plants.

The first of the plants on order, a Standard Model R-M, 6,000-lb. Road-Master, will be delivered to Industrial before the end of the year.

Peerless Cement Company, Detroit, Mich., reports net earnings for the fiscal year ended April 30, 1956, of $2,232,346, or $2.40 per share, compared with $1,911,112, or $2.05 per share for the preceding year. Net sales for the period amounted to $15,071,593, an increase over last year's total of $13,597,910.

Another new BRUNNER & LAY 6" CARBIDE BIT ... the HOLE-MASTER

Two air holes, and wide chip channels, permit this down-the-hole bit to discharge more and larger chips—to work in rock, not its own cuttings. Get the complete details—we'll be glad to demonstrate.

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☐ Please send me information on your 6" carbide down-the-hole drill bit—the Hole-Master.

☐ Send information also on your 6" carbide Rok-Master bit for use with the Quarrymaster drill.

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TITLE_____

COMPANY_____

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Lehigh Portland Cement Finishing Major Expansion At Buffalo, N.Y., Plant

The multimillion-dollar expansion of the Lehigh Portland Cement Company's plant at Buffalo, N. Y., described as one of the major construction-expansion programs in the Buffalo area, is scheduled for completion by the end of this year. The John W. Cowper Company, Inc., is the general contractor.

Some 24,500 cu. yd. of concrete and 1,200 tons of reinforcing steel will be placed to construct 24 new cement-storage silos with a combined storage capacity of 360,000 bbl. of cement.

Also under construction at the Lehigh plant is a continuous-grinding cement mill which will convert the clinker material into the finished product ready for storage and delivery. In addition, an 18-bay garage for the repair and storage of cement transport trucks, and a shipping and sales office building will be erected. The expansion is expected to increase the company's productive capacity 20 percent.

$15,000,000 Loan to Indonesia Financing First Cement Plant

Within the last 15 months the appearance of a village in Indonesia, Gresik, has been undergoing a tremendous change. Dominating the scene today are the big kilns and silos of the first Indonesian cement plant, designed and built by Americans.

The erection of this $15,000,000 plant for the Gresik Cement Corporation is considered a major step in the country's industrial development. The contract for its construction was signed by Indonesia with Morris-Knudson International in August, 1955. Production is expected to begin next May.

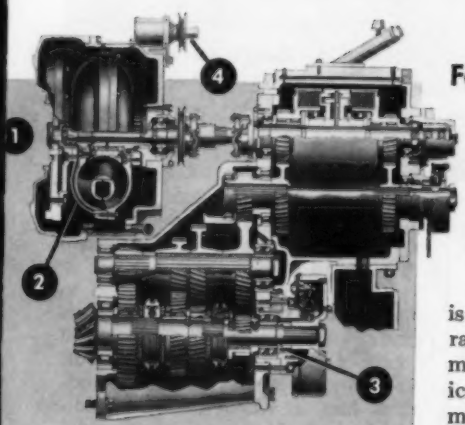
Indonesia is financing the project from a $100,000,000 U. S. Export-Import Bank loan, and is to repay the sum by 1970.

Operation of a new quarry 6 miles north of Raleigh, N. C., was started recently by the Nello L. Teer Company. It is planned to open an asphalt plant at the quarry site early in 1956. The Teer concern operates four other facilities, and proposes to develop a stone plant at Rocky Mount, N. C.

Brazilian cement production in 1955 amounted to 2,700,000 tons, compared with 2,400,000 tons in 1954 and 2,000,000 tons in 1953.

190 HP

NEW *POWER Flow* Adams 660
with Torque Converter



1. 190 hp Cummins or General Motors Diesel Engine (not shown).

2. Torque Converter — Adams single-stage type. Multiplies torque 3-to-1—provides infinite gear ratios—absorbs shock loads to prevent engine lugging or stalling.

3. Constant-Mesh Transmission—with power clutch for forward-to-reverse motion without shifting — 4 speeds forward to 27.4 mph, 4 reverse to 24.4 mph.

4. Tail-Shaft Governor—adjusts engine speed automatically to maintain constant grader speed preselected by the operator.

Forward speed to 27.4 mph — reverse to 24.4

New POWER-*Flow* Adams 660 works at all times at fastest possible speed and highest efficiency. Its torque converter automatically balances speed and applied power to match the load. Engine torque is multiplied 3-to-1 in infinite gear ratios. Tail-shaft governor supplements torque converter by automatically adjusting engine speed to match variable load conditions.

This maximum flexibility in power transfer provides a cushion against load shock, reduces wear and maintenance on engine and transmission. When bucking varying heavy loads, frequent gear-shifting is eliminated . . . no engine stalling. Operators get *more* work done — with *less* effort.

Shift forward to reverse with simple foot control

Adams power-shift clutch shifts instantly in any gear range — from forward to reverse, reverse to forward — with the simple movement of a foot pedal. This leaves operator's hands free for steering and for more accurate control of blade.

POWER-*Flow* "660" offers many extra advantages:

Power Steering — gives the "feel" of hand steering, with hydraulic power doing the work.

Double-Action Hydraulic Braking System — applies pressure to brake on transmission as well as to brakes of 4 tandem drive-wheels.

Engine Rubber-Mounted—with no vibration transmitted to machine. Reduces operator fatigue.

Foot Accelerator — makes driving on highways and through traffic as safe and easy as driving a truck.

Six Big Tires — 14.00 x 24 — adequate traction and flotation for work in any material or footing.

Slide-Shift Moldboard — shifts easily, right or left, for long reaches.

Optional Equipment — includes Power-Shift Moldboard, Scarifier, Cab, Bulldozer, Elegrader, V-type Snow-Plow and/or Wing, Snow-Blo Wing, and Rotary Snow-Plow.

Look into POWER-*Flow* Adams 660

See how this fast, 190 hp grader can help keep your heavy work ahead of schedule. *Write for details.*

Adams, POWER-*Flow*—Trademark AG-1262-G-b-6

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

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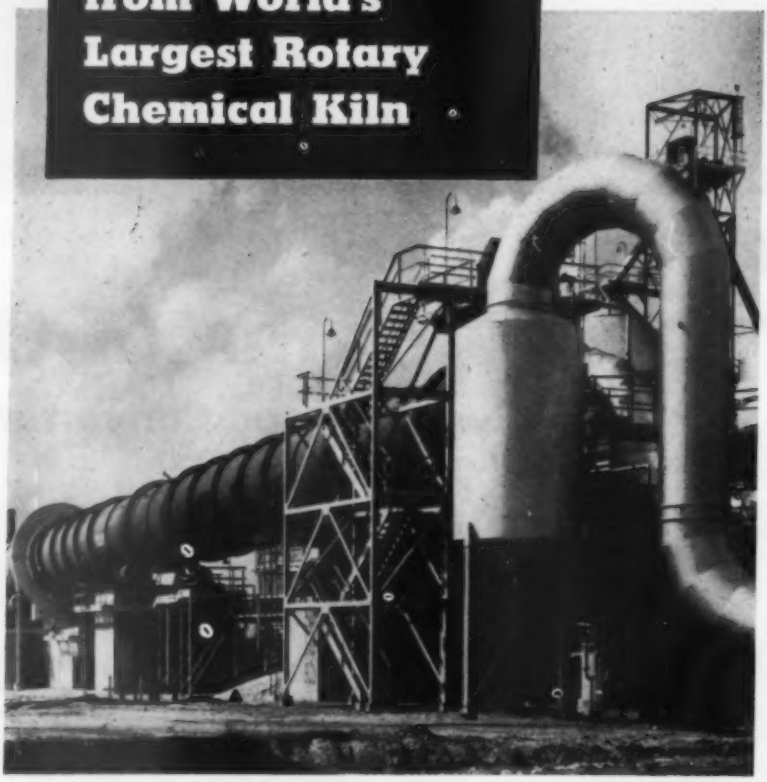
See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

Peabody Scrubber Cleans Exhaust from World's Largest Rotary Chemical Kiln



In the new lithium hydroxide plant of American Lithium Chemicals, Incorporated, San Antonio, Texas, Peabody Scrubbers play a vital role by recovering valuable lithium ores from rotary kiln exhaust gases. This, the world's largest rotary chemical kiln, is served by two 11-foot Peabody units.

As in other Peabody Scrubber installations, effectiveness of recovery of fine ore particles is assured by the exclusive Peabody impingement plate design. Because of this special feature, gas and scrubbing liquid are brought into intimate contact and efficiencies of 99.8% are not uncommon in product recovery applications of this type.

Consult Peabody on any problem involving towers for scrubbing, cooling and absorbing.

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We urge our readers to give consideration, and also a contribution, to the March of Dimes, so that the scourge of polio may soon be eliminated.

Robert A. Costa to Head Kaiser Gypsum Division

Robert A. Costa has been appointed vice-president and assistant general manager of the Kaiser Gypsum Company, in charge of the company's newly-created Insulating Board Division. He will maintain his offices at the firm's general headquarters in Oakland, Calif.

The new division was formed to operate the St. Helens, Oreg., plants and timberlands which include all assets of Fir-Tex Insulating Boards, Inc., and Western Insulated Products, Inc., its wholly-owned subsidiary, which Kaiser Gypsum purchased recently.

Mr. Costa, formerly merchandise manager for Kaiser Gypsum, joined the company in 1950 as administrative assistant to the general sales manager.

Purchase of the Russian River Sand and Gravel Company plant at Windsor, Calif., by the Basalt Rock Company, Napa, has been announced by A. G. Streblow, Basalt president. The purchase, which includes the plant, equipment, and gravel deposits, will supplement the company's sand and gravel operations at Healdsburg, Calif.

The Perlite Department of the Minerals Division, International Minerals & Chemical Corporation, Chicago, Ill., has leased a recently-completed 15,000-sq. ft. structure at Los Angeles, Calif., in order to expand its plant and warehousing facilities in that area.

These six mix trucks are just a part of the large fleet operated by the Howat Concrete Co. of Washington, D. C. The fleet is maintained entirely on Gulf products.

GULF QUALITY FUELS and LUBRICANTS

contribute to more hauls, fewer overhauls at Howat Concrete Co.

Like scores of other progressive concrete suppliers, Howat Concrete Co. has found that Gulf quality products help them get more operating hours from equipment with lower maintenance costs.

It will also pay you to take stock of the advantages offered by Gulf petroleum products and service. You get quality lubricants that provide an extra margin of protection for every gear and bearing; fuels that burn evenly and completely, with fewer engine deposits; and expert petroleum engineering counsel.

Try Gulf quality products and dependable service now. Contact your nearest Gulf office today and have a Gulf Sales Engineer recommend the right types and grades for your equipment.

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THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

Construction Picture Bright For Next Decade—Baker

The nation's booming construction industry, which is expected to set an all-time record this year, will establish another new record in 1957, according to one of the industry's top spokesmen.

Melvin H. Baker, board chairman of National Gypsum Company, termed the industry's long-range outlook "staggering." He estimated that by 1965 construction will reach the $53,000,000,000 mark—$9,000,000,0 above the total predicted for this year.

"The dollar volume of new highway construction and expansion of privately owned utilities may reach $5,500,000,000 in 1957," Mr. Baker declared. "The most significant gains among utilities probably will occur in railroad, telephone, gas, light, and power firms."

He predicted that private spending for new industrial plant expansion, "apart from utilities," may reach $3,300,000,000 in 1957, against $3,000,000,000 predicted for this year. A 10 percent rise in commercial construction next year was forecast by the industrialist. He said school construction would break another record, and that there are indications that housing starts will continue at the present level until well into 1957, and then pick up to reach a higher level.

Among the reasons Mr. Baker believes next year will be another record year for the construction industry are the following: (1) most sizable corporations are going ahead full speed with their expansion programs; (2) business is good, with no signs of a downturn; (3) peacetime unemployment has reached its lowest level; and (4) nationwide supplies of building materials should be adequate, with increased capacity and high productivity sufficient to preclude all but spot shortages in steel and possibly cement.

Mr. Baker stated that in his construction forecast he had "taken into account the decrease in housing which is hurting the industry." He declared that "tight mortgage money," an anti-inflation device, was the principal reason for the decline in home building.

Another deterrent in home building, according to Mr. Baker, is the high cost of construction, involving labor and materials. . . . "Builders report that construction costs have gone up along with land costs . . . they point out that overall costs are up 6 percent over 1955." He added the public is "not sympathetic to the rise in cost."

Despite the current slowdown, Mr. Baker predicted an upturn in home building. He cited the following reasons for holding this opinion:

1. "Builders are finding ways of holding down costs . . . that will reduce 'on-the-job' labor."
2. Home owners are . . . trading in their present residences under the revised trade-in code formulated by the FHA.
3. The decline in new home construction does not indicate that the market is saturated. The rising population assures that the market potential is ever increasing.
4. A recent survey indicates that about 2,250,000 families are considering the purchase of a new home by the early part of 1957.
5. The demand for new houses is still strong.
6. The recent marriage and birth rates are "astonishing even to the most optimistic forecasters."
7. We are losing homes at the rate of about 300,000 a year from fires, floods, and other causes.
8. Full employment and higher wages will help to stimulate and maintain a desire for better housing.

men who know costs

Specify HAMILTON CONVEYOR BELTING

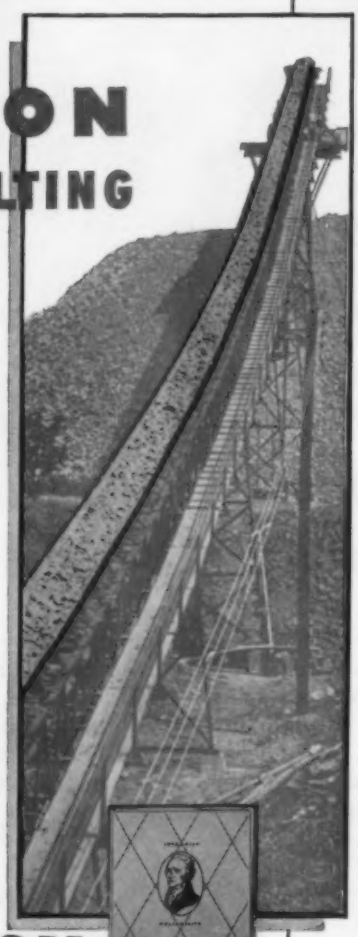
. . . . tailor-made for their installations!

What are your requirements?

Write, wire or phone us. Our nearest office will give you immediate, personal service.

. . . . . and remember

HAMILTON— has served industry for over 86 years



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Ask for our 1956 catalog on precision belting.

You'd move slowly, too... If you carried 97.8% LIMESTONE on your back!

It's true — our friend "*Speedy*" *The Snail's* house misses being pure calcium carbonate by just 2.2%.

But along the Norfolk and Western there are vast deposits of limestone that are even more pure—in fact, more than 97.8% calcium carbonate.

Some of these deposits are in mineable thicknesses of 100-foot veins, and in one location alone it is estimated that the deposit exceeds 100 million tons. Seldom has so much high quality limestone been so accessible for cement and chemical lime manufacturers — with markets nearby and dependable N&W transportation available.

Let us tell you about these valuable deposits, in detail, in confidence, and without obligation.

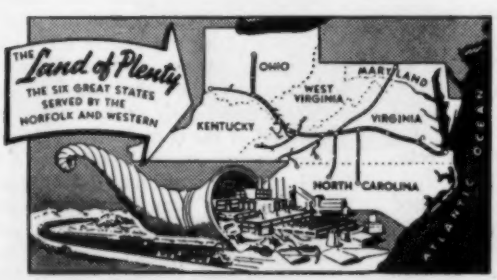
And here are typical analyses*

	DHL-1-1	DHL-1-2	DHL-1-3
SILICA (SiO_2)	.36%	.30%	.34%
IRON OXIDE (Fe_2O_3)	.072	.043	.049
ALUMINA (Al_2O_3)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.65	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

***Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.**

Write, Wire or Phone:

INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer PQ-715 (Phone 4-1451, Ext. 474)
Norfolk and Western Railway
ROANOKE, VIRGINIA

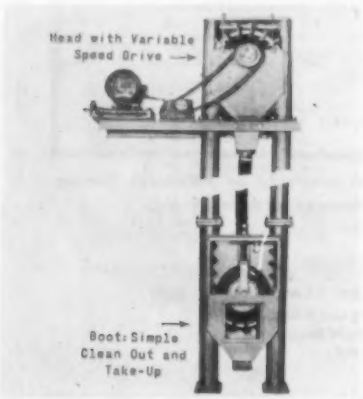


Norfolk and Western RAILWAY

New Machinery
and Equipment

For Further Information Use Card on Pages 109-110

• Dart Truck Company's Model 35SL features a box girder frame, a Cummins 400 hp. diesel engine, Twin Disc hydraulic torque converter, Dart-Cotta three-speed transmission, and a heavy-duty mining cab of all steel and welded construction. Hydraulic equipment includes two Dart three-stage, double-acting telescopic hoists. Raising, lowering, holding, and floating of the body is controlled through a fast-acting four-way valve. The chute-type body with tapered width from front to rear permits easy unloading. Capacity is 24 cu. yd. struck; 27.5 cu. yd. heaped. Gross weight with 70,000 lb. of payload is 126,000 lb. **(51)**



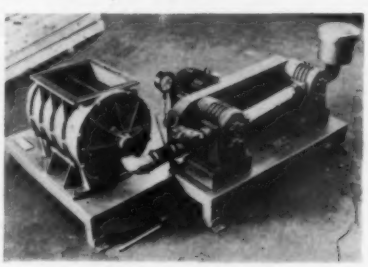
• Hapman Conveyors, Inc., has designed a new Hi-Lift Cableveyor-Elevator for elevating free-flowing materials such as sand and gravel. The unit consists of standard steel cable carrying concave buckets, uniformly spaced by heavy springs under compression. A flexible connection joins cable ends. The simplified design eliminates rivets, bolts, or other fastenings, and permits the cable to flex naturally under low stress. Both cable and tubes are built in standard section lengths, and elevators can be assembled to almost any practicable height. **(52)**

• Tru-Lay Push-Pull remote controls, manufactured by the Automotive and Aircraft Division, American Chain & Cable Company, Inc., transmit positive control impulses directly to any desired point around obstructions smoothly and accurately, eliminating toggles, bell cranks, rods, and other devices. Tru-Lay controls can be used for transmitting motion between two fixed points or between points where one or both may be changing their relative positions.

Standard assemblies are furnished with swivel type end fittings which have angular movement in any direction. The swivel joints, as well as the sliding ends, are protected with seals to keep out moisture, dust, and other foreign substances.

When standard fittings are used Tru-Lay assemblies are easily installed. For the 3/32 in. diameter assembly where loads are very light a simple clip can be furnished. This assembly, as well as the larger sizes, can be clamped at the conduit fittings with a machined bracket. For more rugged installations, especially where the anchoring medium is a heavy plate bulkhead or a bracket formed of structural shapes, the threaded type conduit fittings are available.

The standard assemblies, bracket type head controls, and the heavy-duty micro control V-700 series and hand operated assembly D-800 series, all featuring long-life, accuracy, and high capacity, are described in detail in literature available from the manufacturer. **(53)**

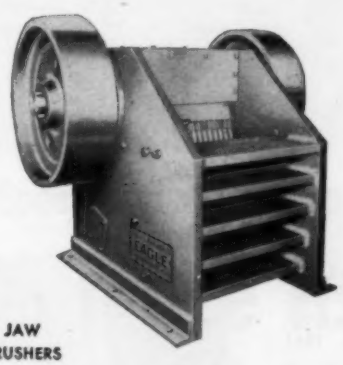


• The Process Machinery Division of the Superior Separator Company has introduced a new machine system which pumps granulated materials as easily as water. This new system is based on a machine called the "Fluidizer" which combines small quantities of high pressure air with granular materials, such as cement and lime, to move the material up to 300 ft. vertically or horizontally. The heart of the completely enclosed system is an unusual rotary valve which actuates the material flow. The "Fluidizer" can be used in systems requiring transport at 50 lb. per minute up to 1,000 lb. per minute. **(54)**

PRODUCE MORE STONE AND GRAVEL WITH MOBILE

Eagle Crushers

Portable Eagle crushing plant operated by Harry Miller Contracting Co., Suffield, Ohio, delivers pit run sand and gravel at rate of 100-125 yds. per hour for cushioning concrete super-highway nearby. Whole layout can be moved as gravel is consumed. (Power source is electric generator set—could be gasoline or diesel direct drive.)



JAW CRUSHERS

HAMMER-MILLS

Eagle Crushers—both jaw type and hammermill—bear the characteristic marks of the experienced manufacturer—simple design, durable construction, ease of servicing. Eagle originated the one-piece, electrically welded frame—has pioneered in the field of portable, compact, crusher plants like the one above.

There is a range of sizes in the jaw crusher—and a variety of styles (skid-mounted, trailer, portable, roadside). Likewise, the hammermill or impact breaker is made in several sizes and for various applications—is particularly well suited to limestone reduction.

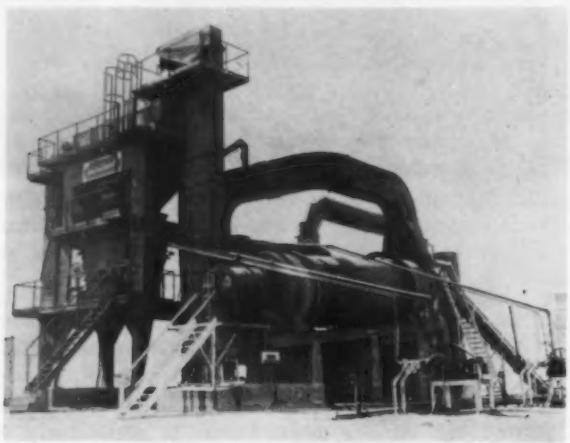
EAGLE

JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

CRUSHER CO., Inc. GALION OHIO·U·S·A

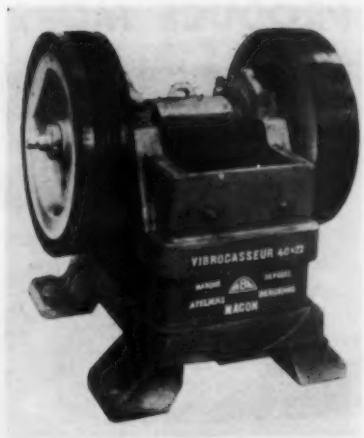
You are invited to consult our engineers on your crusher problem — no obligation!

• High capacity, choice of electrical or mechanical control, and ease of travel are features of this type 77 portable crushing and screening plant manufactured by Diamond Iron Works. The "line-flo" rotor lift principle of operation assures a continuous flow of material. Capacity, based on 25 percent oversize passing 1 in. screen, is 160-225 cu. yd. per hour. Operating height of the type 77 is 15 ft. 3¼ in. **(55)**

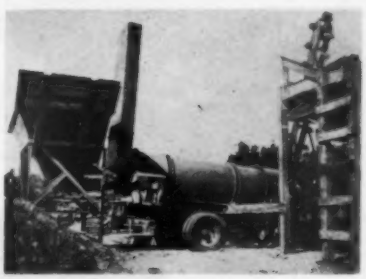


• The Standard Steel Corporation has announced its new line of Road-Master semi-portable asphalt plants, built in capacities ranging from 4,000 to 6,000 lb. Features of the new line include over-sized screen, dryer, and elevator; dust seals on all units; and simplified controls. **(56)**

• The Construction Machinery Division of the Clark Equipment Company has announced two additions to its line of tractor-shovels. Model 375A, a new 6 cu. yd. tractor-shovel, will lift 30,000 lb. while stationary and carry 15,000 lb. at 4 m.p.h. Model 275A, a 4 cu. yd. unit, lifts 22,000 lb. static load and carries 11,000 lb. at 4 m.p.h. Each machine has four speeds forward and four speeds reverse, and top road speed of 28 m.p.h. Full power shift with two fingertip control levers on the steering column is standard equipment. **(57)**



• The "Vibrocasseur" series single toggle type jaw crusher, manufactured by Ateliers Bergeaud Macon, is available in ten sizes and ranges in capacity from 1½ to 600 t.p.h. It crushes the stone between a fixed jaw and a moveable jaw with an elliptic motion which provides ease of outthrow. The heavy, unwarpable body takes up by its inertia any vibrations due to the alternative blow motion. Bearings are enclosed in dustproof housing which avoids frame wear and facilitates maintenance. The reversible jaws are locked by wedges. The type VB models can be fitted easily on a portable or semi-stationary unit. Illustrated is the VB 40 by 22 single toggle jaw crusher with 16-in. by 9-in. mouth opening. **(58)**



• Littleford Bros., Inc., has added a portable Trail-O-Dryer and dual feeder bin to its line of equipment. Model 25T Trail-O-Dryer, useful in the low cost drying of sand and aggregate, has a capacity of up to 25 t.p.h. Capacity varies depending on the type of aggregate and the moisture content. Model 5T25 dual feeder bin has a capacity of 5 tons; a division in the bin provides for two 2½ ton compartments. Two adjustable gates permit variable proportioning of two different aggregates. **(59)**

It's time to compare . . . with LINK-BELT SPEEDER

Link-Belt Speeder gives you up to

40% more usable horsepower

greater line pull . . . bonus power to dig, hoist, swing, travel

Link-Belt Speeder machines are built to take full advantage of the "bonus" horsepower available in shovel-crane engines!

SIZE for size, a Link-Belt Speeder gives you more *usable* horsepower. You get more line pull, more power at the bucket teeth . . . more power to swing, hoist and travel. That's because a Link-Belt Speeder takes more power out of its engine!

You see, a Link-Belt Speeder is built with extra strength—strength to handle greater horsepower. Thus, the engine in a Link-Belt Speeder can be (and is) set to deliver the greater horsepower for which the machine is designed. Link-Belt Speeder gives you a bonus of up to *40% more usable horsepower than machines using the same make and model engine!* And, in every instance, the engine in a Link-Belt Speeder is run at speeds well within the manufacturer's recommendations.

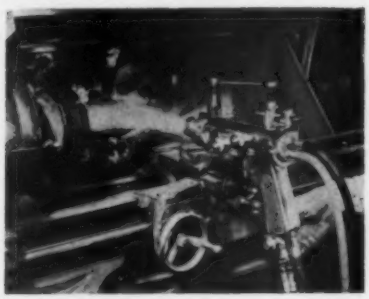
How to compare

Your Link-Belt Speeder distributor will furnish complete specification information. Check sizes and materials in Link-Belt Speeder shovel-cranes that allow you to use the actual horsepower you are paying for. LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa. 14.348

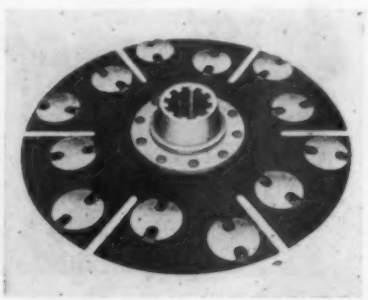
LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

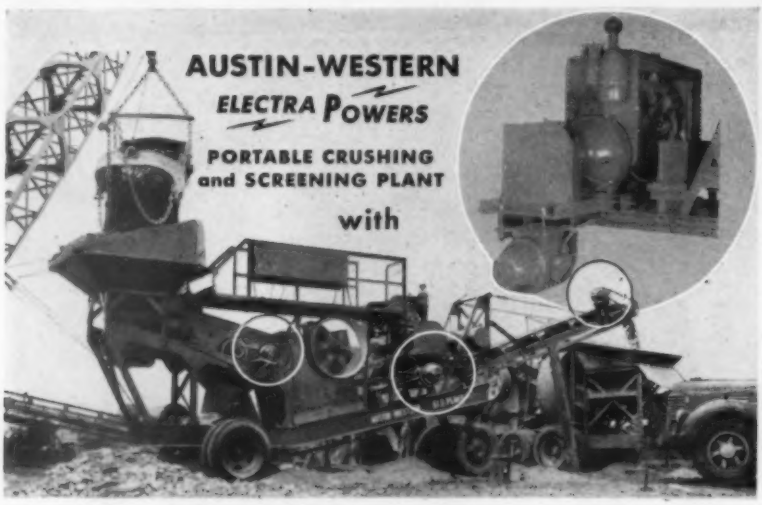
• Athey Products Corporation has designed a 35-ton capacity rear-dump trailer especially for the transport of sticky materials. Concentrated body heat is produced by conducting engine exhaust gases to the critical areas of the trailer interior body plates where ore tends to stick. The seal of this material is broken by the heat and ore slides out quickly and completely. (60)



• Model C-2 Spraywelder, Wall Colmonoy's new metal spray unit for applying hard-facing alloys and other metals in powder form, features improved metal flow rates and increased deposit efficiency. In the Sprayweld process of welding, the powdered alloys are sprayed on the part and then fusion-bonded by heating with an oxy-acetylene flame. The complete unit includes a lightweight aluminum pistol, a chromium-plated hopper, a redesigned carburetor and spraying head, a combination air regulator-filter, and suitable oxygen, acetylene, and powder hose fittings. (61)



• A complete new line of button-type, heavy-duty clutch plates, engineered to deliver dependable, uniform friction action under severe operating conditions, is available from The S. K. Wellman Company. These plates are fitted with multiple buttons faced with Velvetouch Ceramic, an advanced friction material. The buttons, double-riveted to prevent spinning and dishing, are not encased in a steel cup; only the friction material is in contact with the pressure plate and flywheel. (62)



WINPOWER GENERATORS

Baldwin-Lima-Hamilton Corp.,—Construction Equipment Division—Lima, Ohio, manufacturers of AUSTIN-WESTERN crushing and screening equipment shown here, use WINPOWER generators for electric power. They know that by using WINPOWER powered electric motors and speed reducer drives on conveyors, feeders and screens they can eliminate long drive belts and drive shafts, expensive to buy and difficult to replace in case of failure in the field. *Whatever* your need there is a WINPOWER Generator for you. Generators as well as gasoline or diesel powered electric plants in capacities from 400 watts to 100 KW. You can save time and money with WINPOWER. See your WINPOWER Distributor or phone, write or wire at once for complete illustrated folder and specifications.

WINPOWER MFG. CO.
NEWTON, IOWA • U.S.A.

for tough screening jobs . . .

CF&I INDUSTRIAL SCREENS

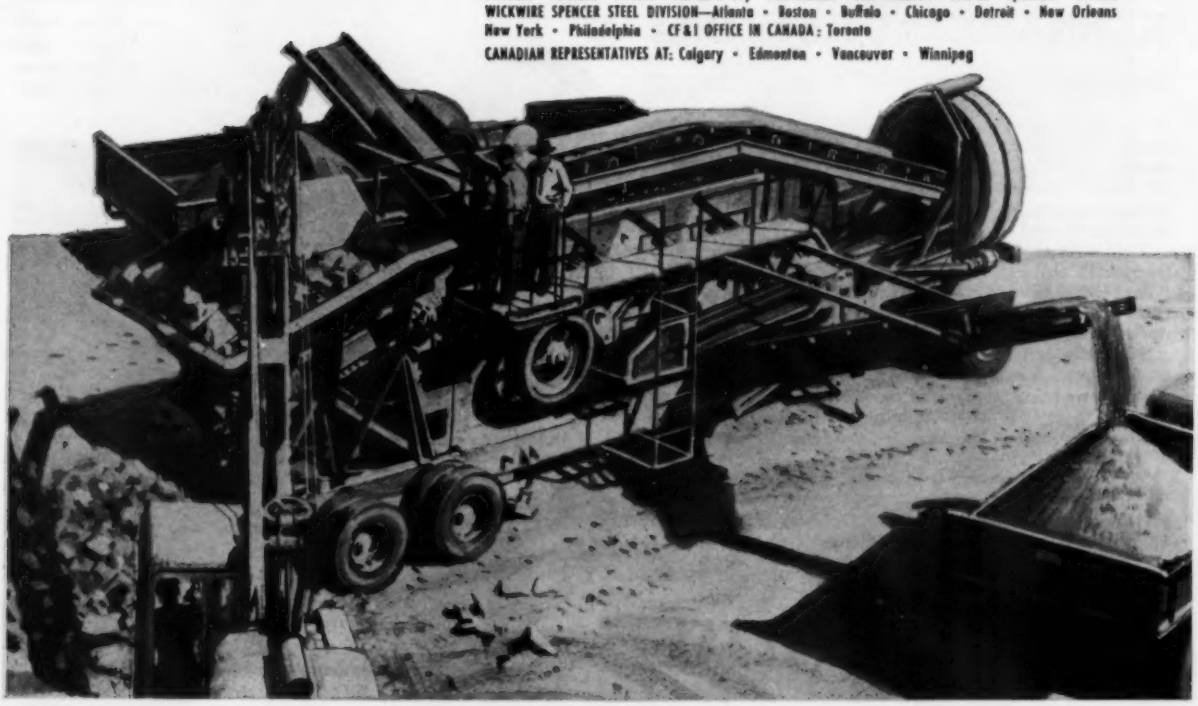
You can depend upon CF&I Industrial Screens to give long service life with little downtime no matter how tough your screening job. That's because CF&I Screens are made from specially selected steel which is crimped and woven extra tightly to assure high production throughout screen life—even when the screens are subjected to severe abrasion, corrosion or high temperatures.

Next time you need an industrial screen, be sure you investigate CF&I Industrial Screens—you'll be glad you did.

CF&I **SPACE SCREENS**

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper Denver • El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Los Angeles • Oakland • Oklahoma City Phoenix • Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans New York • Philadelphia • CF&I OFFICE IN CANADA: Toronto
CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg



• Standard equipment on this Available Truck Company crane carrier includes power steering, double outrigger boxes and beams with provision for screw jacks and floats. The carrier is 6 by 6 drive on 10 ft. wide rear axles, powered by a 225-hp. gasoline engine. The carrier in combination with shovels and draglines is useful for excavating and loading. Capacity ranges from 12½ to 50 tons. **(63)**

• This fully air-controlled 1¼ cu. yd. Lorain 56 is a new addition to Thew Shovel Company's line. Convertible to shovel, crane, clamshell dragline, or hoe service, the "56" incorporates many new features: two-layer, "Metered-Air" controls for all turnable operations; positive, effortless "Air-Ease" power crawler controls; "Shear-Ball" mounting; detachable counterweight to facilitate over-the-highway travel; and lighter, stronger, longer, all-welded crane boom with square - tubular - main - chords and round tubular lacing. Shovel boom is 21 ft. long with a 17-ft. stick. **(64)**

Toe hole drilling with Kennametal Rock Bits

KENNAMETAL* Rock Bits

drill abrasive sandstone 12″ to 14″ per minute

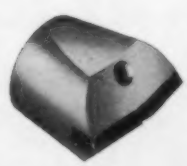
Using Kennametal PX600-3½ and PC600-3 Bits, this contractor gets 150 feet per grind drilling Pocono sandstone, and 8 to 10 regrinds per bit. At drilling speeds of 12″ to 14″ per minute, this means that drilling time is cut to a minimum, his investment in drill bits is low, and bit maintenance is down to rock bottom.

This is typical Kennametal Rock Bit performance in percussion drilling. To provide for varying conditions, Kennametal Rock Bits are available in three styles, all three with special Kennametal grades that stand up under heavy shock and abrasion.

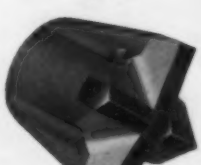
Style PA, or Chisel Bits provide fastest penetration in uniform rock formation. Style PC, or Cross Bits operate without wedging in fissured or ravelly formations. And Style PX, or "X" Bits eliminate rifling and produce uniformly round holes. Bits are available in sizes up to 5″ diameter.

Why not discuss your drilling problems with a Kennametal representative? He will help you select the right style for each of your operations. Or write KENNAMETAL INC., Mining Tool Division, Bedford, Pa.

*Trademark of a series of hard tungsten and tungsten-titanium carbides.



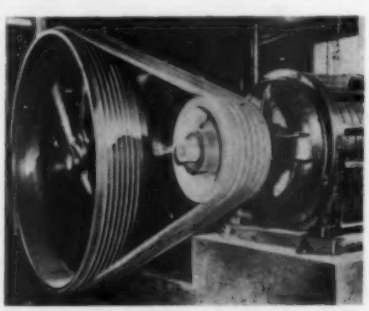
Style PA



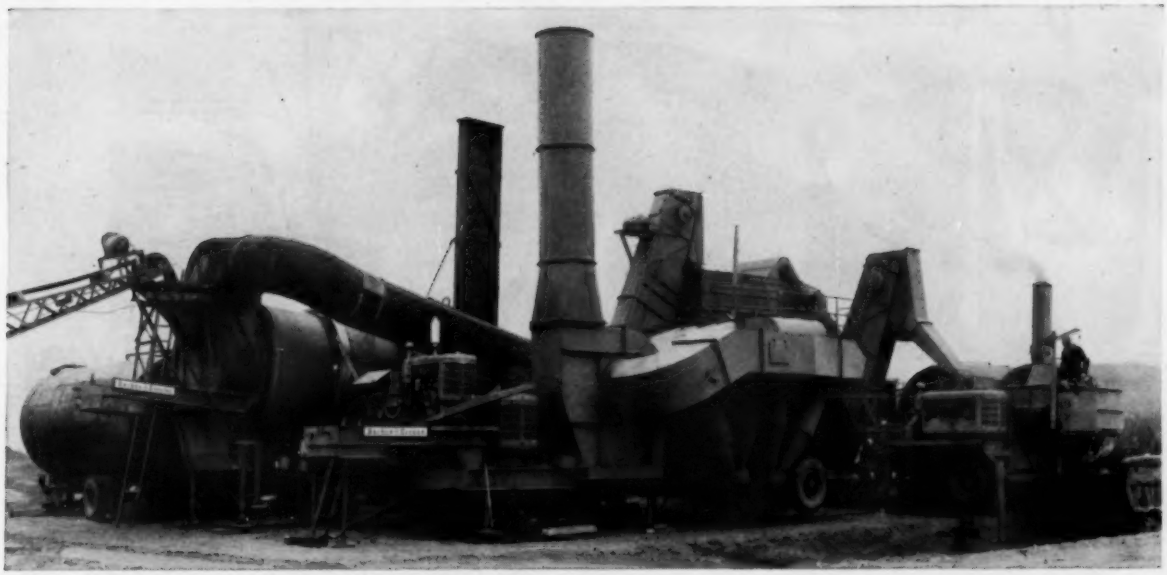
Style PC

Style PX

INDUSTRY AND KENNAMETAL ...Partners in Progress



• The Thermoid Company has designed a new Powerflex Hi-Capacity V-belt for use on multi-V-belt installations in which increased power transmission and a minimum of maintenance is required. The new belt, available in all standard sizes, features a special oil resistant cover to prolong belt life. Bearing life is increased because of lighter weight and lower stresses. **(65)**



How to lower the cost of asphalt paving

with Barber-Greene Continuous Plants . . . available in capacities from 20 to more than 200 tons per hour. Built for maximum portability, these plants produce all types of mixes at highest capacity, and for lowest operating cost. Once the proportions are set, operation is automatic; the human element is eliminated and manpower requirements are reduced to a minimum.

with Barber-Greene BatchOmatics . . . available in 2000, 4000 and 6000 pound sizes. Operating on inherently automatic principles, these plants save seconds at every point in the cycle. Instant changeover from automatic operation to manual production of mixes for the drive-in trade . . . instantly reset to preset repetitive cycle operation. New Dyna-Mix pugmill gives faster coating.

with the Barber-Greene Finisher. Having the widest choice of operating speeds, the Barber-Greene Finisher can lay every job at the maximum speed. It provides positive traction, superior maneuverability and unmatched ease of operation. Wide receiving-hopper simplifies truck discharge, eliminates spillage. No other machine paves as permanently, as speedily and as economically.

Write for literature on any plant in the cost-cutting line. Specify capacity. 56-25-AL

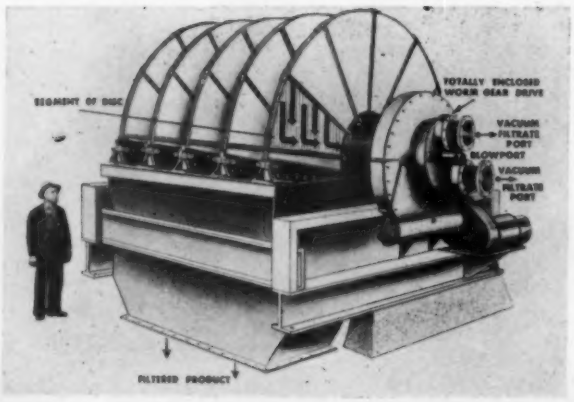
See you at the BG ROAD SHOW

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

• Whiteley graphited bronze bearings are recommended by the manufacturer, the Whiteley Bearing Corp., for applications in which lubrication is difficult or subject to neglect; where the bearing is a sealed application; or where high temperatures are involved. The graphite is inserted under pressure and absorbs the lubricant which is then fed to the shaft. Graphiting is permanent and wears evenly with the bearing surface. Pictured at the left is the Whiteley self-lubricating grooved and graphited bushing; at the right, the Whiteley plugged bushing. **(66)**



• Denver Equipment Company's new 9-ft. dia. disc filter has 105 sq. ft. in the filter area per disc. There are 12 segments per disc, which gives greater filter capacity because more complete segments are under vacuum each revolution. The patented filter segment design provides gravity drainage prior to discharge and results in drier filter cake. Flexible bellows type hose is provided, which prevents tension on the valve cover and allows the valve to seat tightly. **(67)**

High Pile Discharge

Full 60° Dumping Angle

Rugged Stability

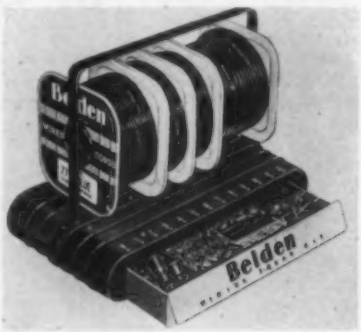
OMAHA STANDARD

END DUMP TRAILER

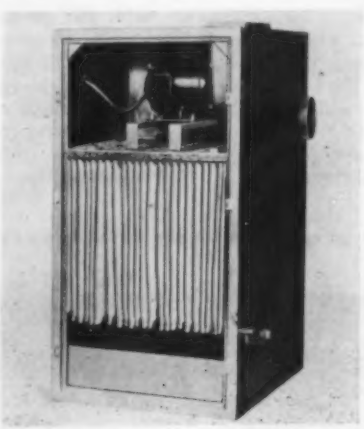
Accurate load distribution. Made in all sizes. Write for details.

Distributorships available in some areas.
"Custom-Made Material Trailers—for ANY Commodity"

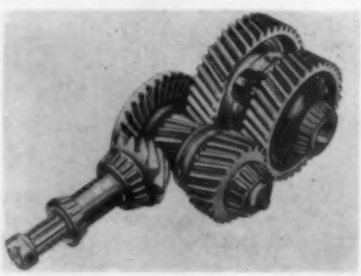
OMAHA STANDARD
2401 W. Broadway, Co. Bluffs, Ia.



• A complete portable wiring kit is offered by the Belden Manufacturing Company for the repair of trucks and other equipment in the field. With this easy-to-carry wire and terminal department, primary leads and spark plug wires can be quickly made up on the spot. **(68)**



• All Torit "Series 80" cabinet cloth-filter dust collectors have been redesigned to permit over 2½ times more dust storage capacity, according to an announcement made by the Torit Manufacturing Company. The capacity of Models 81, 83, and 84, has been increased from ¾ cu. ft. to 2 cu. ft. Each collector has 150 sq. ft. of cloth filtering area. Internally mounted motors and fans move from 580 to 1,110 c.f.m. of air through the filters at speeds of 5,000 to 8,000 f.p.m. All models in the series have a manual starter with overload protection and a foot pedal for shaking filters clean. **(69)**



• The Timken-Detroit Axle Division of the Rockwell Spring & Axle Company has developed a new kind of 2-speed driving axle for operations requiring short transmission steps and high overall gear reduction. The "Wide-Range" axle is available in 2 to 1 and 2½ to 1 ratio speeds. Its broad range was made possible by reversing the relative positions of the high-range and low-range helical gear sets to place the enlarged helical pinion of the high-range gear set where it would not interfere with the hypoid pinion of the first-reduction gear set. **(70)**

Cord plies spirally applied in
opposite directions, for highest flexibility

BUILT LIKE A TIRE . . .

it's the U. S. Royal Cord Air Hose!

Built like a tire – and *tough as a tire*, with a special construction found in no other air hose:

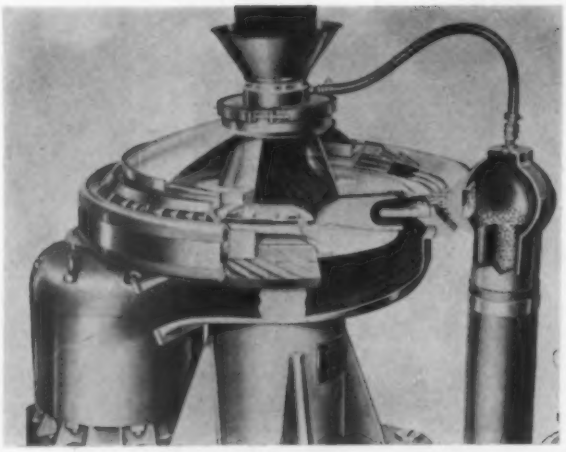
- *Exclusive.* Two counter-spiralled plies of tough special cord floated on resilient rubber for outstanding strength, shear resistance and flexibility.
- Braided cotton breaker ply anchors the tube to carcass *permanently*.
- Tube is high-quality neoprene for maximum hot oil resistance.
- Tough, brown natural rubber cover gives excellent resistance to cuts and abrasion – protects unique construction under extreme service conditions.

U. S. Royal Cord Air Hose has a very high hydrostatic value, with a minimum of contraction or elongation. It is so tough and flexible that it needs no cribbing, can be run over repeatedly by heavy machines without harm. The "hose that's built like a tire" is obtainable in continuous lengths from any of our 27 District Sales Offices, or write Mechanical Goods Division, United States Rubber Company, Rockefeller Center, New York 20, N. Y.

US RUBBER

Mechanical Goods Division

United States Rubber



Cut-away view of the Sharples Super Classifier. Powder is being fed into the intake funnel and distributed at high speed to the classification zone. There the coarse particles are carried into the collector rings, from which they are directed to the coarse discharge airlock valve. Fine particles are carried inward and are discharged into the fines discharge scroll.

• At the American Mining Congress, held recently in Los Angeles, the Sharples Corporation introduced its new high-efficiency fine particle classifier. The Sharples Super Classifier was designed and built as a rugged, integrated unit with an efficient power transmission system, a precision, sealed-spindle assembly, and a self-contained coarse discharge airlock valve. It operates on the air vortex principle.

In spite of its small size and compactness, the Super Classifier has an extremely high capacity—the 5 t.p.h. model occupies about the same space as an office desk.

Cutpoint of the classifier is said to be precise. For example, fine fractions with a top size in the range of 15 to 20 microns will contain less than 0.01 to 0.04 percent 325 mesh screen residue. Product recovery varies from 80 percent to over 90 percent, depending upon product requirements.

Since cutpoint sharpness and efficiency are not affected by feed rate or size distribution, high production capacities combined with high-quality product are easily maintained. The circulating load on existing grinder systems is greatly reduced, making possible an increase in product output without additional grinder capacity.

Special design and construction features minimize the effects of abrasion and wear. Points at which there is high relative velocity between the powder and contacting surfaces have been held to the minimum. For economical maintenance readily replaceable wear inserts have been provided where necessary. In addition, the Super Classifier operates continuously without adjustment.

The Super Classifier is designed to classify effectively particles in the range of approximately 10 microns to 125 microns, average size, depending on the specific gravity of the material.

A complete selection of Super Classifiers is available in capacities ranging from 250 lb. per hour to 10 tons per hour.

Among its uses is ore benefication. A typical installation is described in the flow diagram illustrated. (71)

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BELT FASTENERS and RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

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★ Trough naturally, operate smoothly through take-up pulleys.
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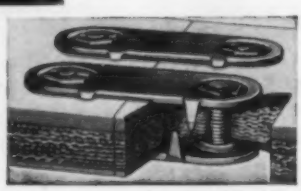
★ Made of Steel, Monel, Stainless, Everdur. Also Promal top plates.
★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



Compression Grip distributes strain over whole plate area

Order From Your Supply House. Ask for Bulletin F-112

FLEXIBLE STEEL LACING CO., 4623 Lexington St., Chicago 44, Ill.

• Model M-8AL, a new unit in the rotary drill line of the Davey Compressor Company, is equipped with a special long drill bar and mast and can drill 24-ft. ledges without changing drill steels. Suitable for mounting on any standard truck, the unit utilizes both compressed air and high pressure water for drilling. The compressor for air blast drilling is a Davey 500 c.f.m. unit; high pressure water pump is a heavy-duty duplex type. The new unit has a rated capacity of up to 600 ft. with air and 1,500 ft. with mud of 6¼ in diameter holes. (72)

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All over the U. S. A. the H. E. Fletcher Co., of West Chelmsford, Mass., is well known for their quality granite, used for highway curbing, bridges, office buildings, home landscaping and facing, dams, tunnels and many other phases of construction.

Here, at New England's largest and most modern quarry, CITIES SERVICE PRODUCTS have been extensively used for over 15 years. As pictured above, diesel powered equipment operating in severe service uses CITIES SERVICE C-200 and C-300 DIESEL MOTOR OILS, CITIES SERVICE DIESEL FUEL, and is kept well lubricated with CITIES SERVICE PACEMAKER OILS.

Find out how highest quality Cities Service Diesel Products can drastically reduce downtime, increase equipment life, and offer day to day savings in the cost of all your diesel motor oils and fuels. Contact the Cities Service representative nearest you, or write Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

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Standard tilt tests show firm holding power up to a 40° angle. Costing only pennies in upcharge, "Magnetized" Multiwalls can save you dollars in usage.

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Let us demonstrate this safer finish. Write Dept. 612 for convincing "do-it-yourself" test.

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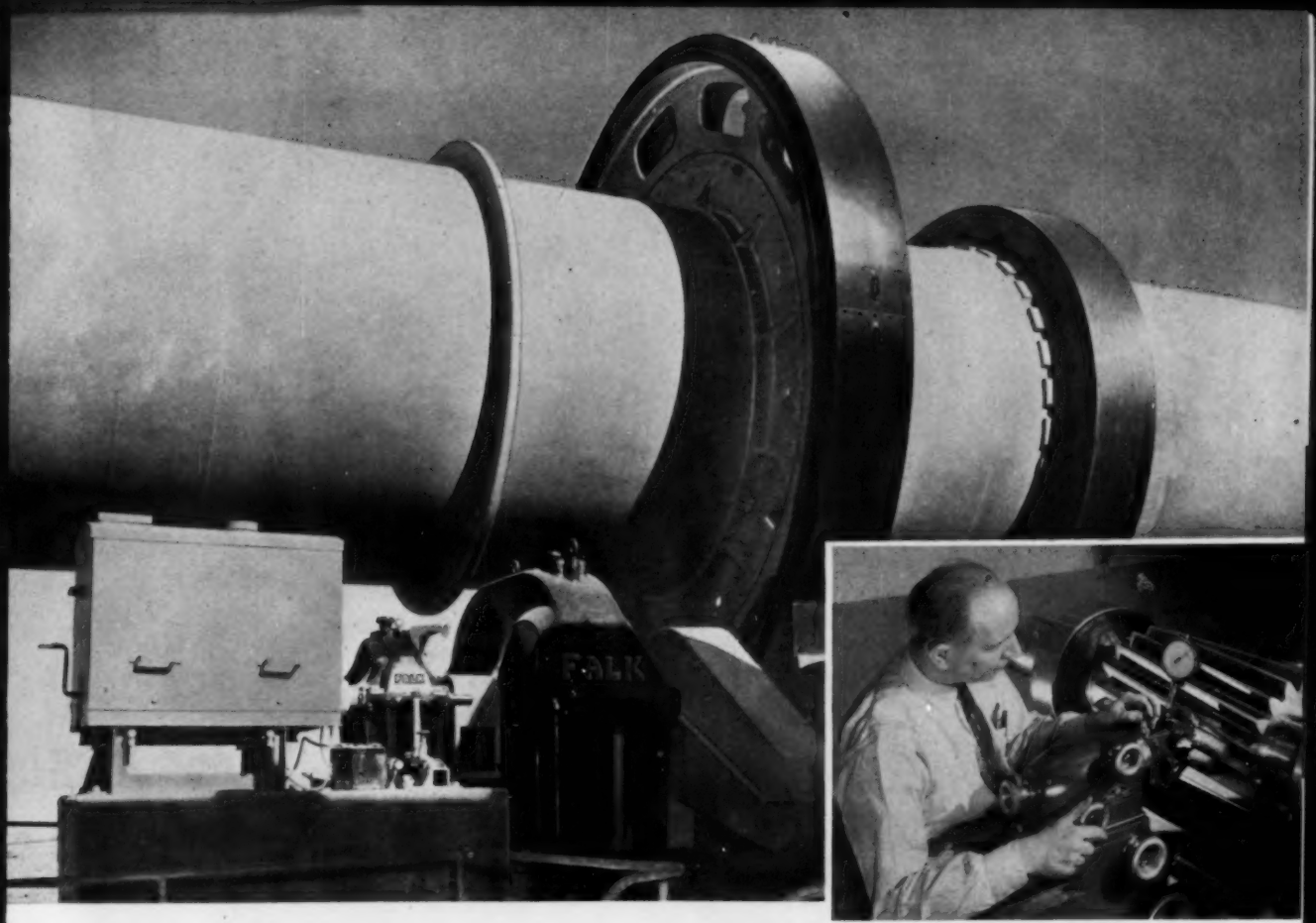

Quick Quiz on Gear Costs

—plus some money-saving answers!

Here are some questions and answers of major importance to mill and kiln operators and engineers who want to keep costs down:

Q. Are you losing production through "down time" caused by gear failures and frequent pinion replacements?

A. Falk Helical Gears and Pinions, correctly engineered, precision-hobbed and of highest efficiency, *keep operating* year-in-and-year-out.

Q. Do antiquated gears force you to use large, costly, slow-speed motors?

A. Falk Helical Gears provide a single-mesh, high reduction ratio drive which permits use of higher-speed motors resulting in savings in power bills and space.

Q. Is abrasion causing accelerated wear on your spur gears and shortening their life?

A. Falk Helical Gears are specially designed and precision-built to give maximum resistance against abrasive wear.

Q. Are gear teeth of outmoded design being taxed beyond their capacity?

A. In Falk Helical Gears, with full depth profiles, several teeth share the load at all times, assuring long service life.

Q. Is vibration, caused by inaccurate gearing, damaging associated equipment?

A. Falk Helical Gears operate so smoothly that vibration resulting from tooth contacts is eliminated.

When expanding or modernizing your mill or kiln facilities, you can effect substantial long-range savings by specifying "Helical Gears by Falk," the nation's pioneer and largest supplier of precision, helical gearing.

Consult any Falk Representative—also, write for
Engineering Report 6170, "Advantages of Helical Gearing"

THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.

MANUFACTURING TECHNIQUES THAT BENEFIT GEAR USERS

The manufacture of Falk Helical Gears and Pinions involves many unique and interesting techniques in foundry, machine shop, laboratory, gear cutting and other departments—including inspection.

A typical example of the extreme thoroughness of Falk methods is shown in the small photograph above. In the Falk gear laboratory, the correctness of tooth spacing on a mill pinion is determined by measuring the normal base pitch. Readings are taken completely around the pinion. Tooth-to-tooth spacing is generally within limits of .0002", and total accumulated spacing error averages only about .0005". These values are a natural consequence of the inherent accuracy of the machines and procedures employed.

Such techniques as this assure the gear user that he is receiving the utmost in quality in every Falk product.

FALK

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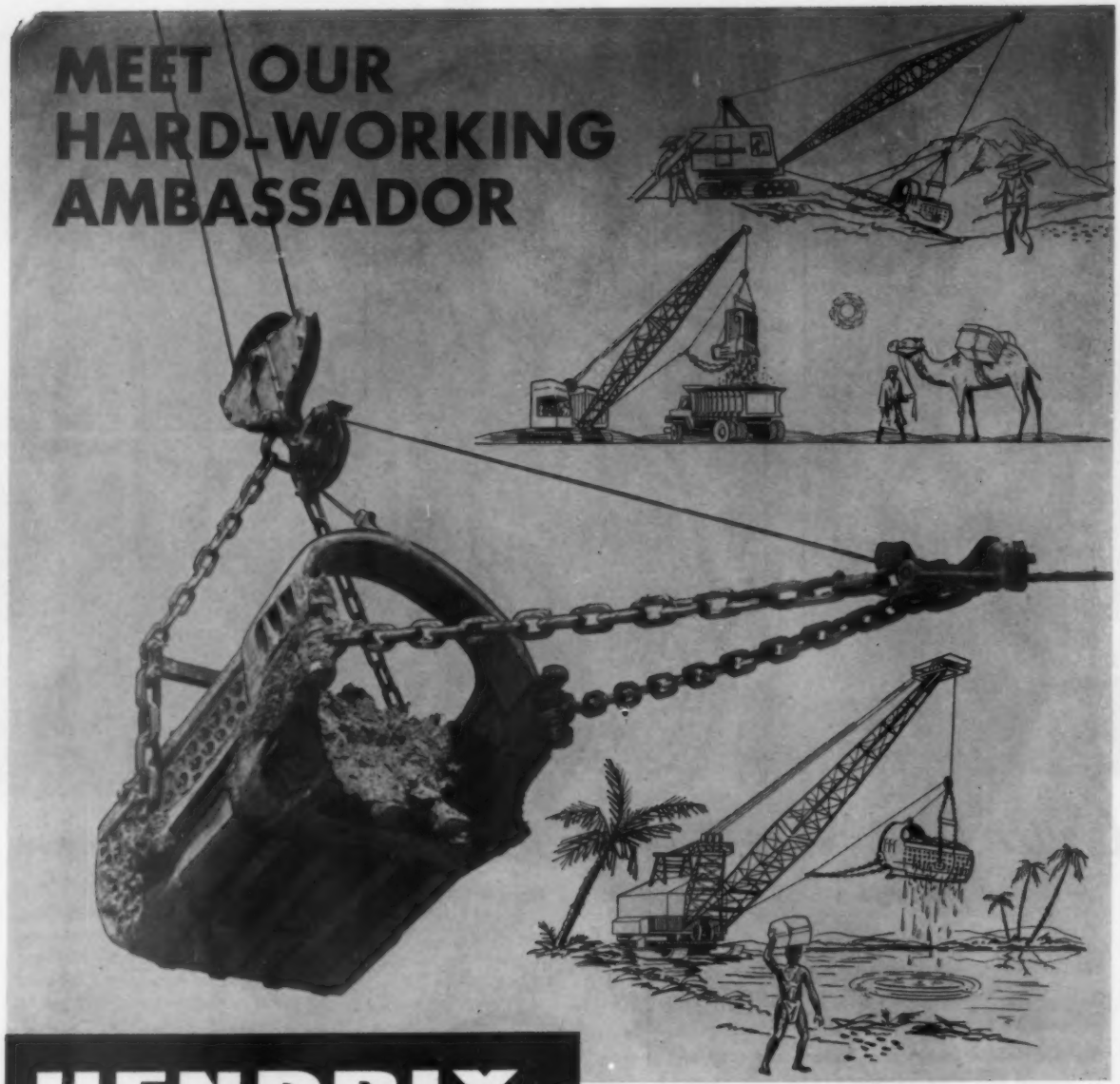

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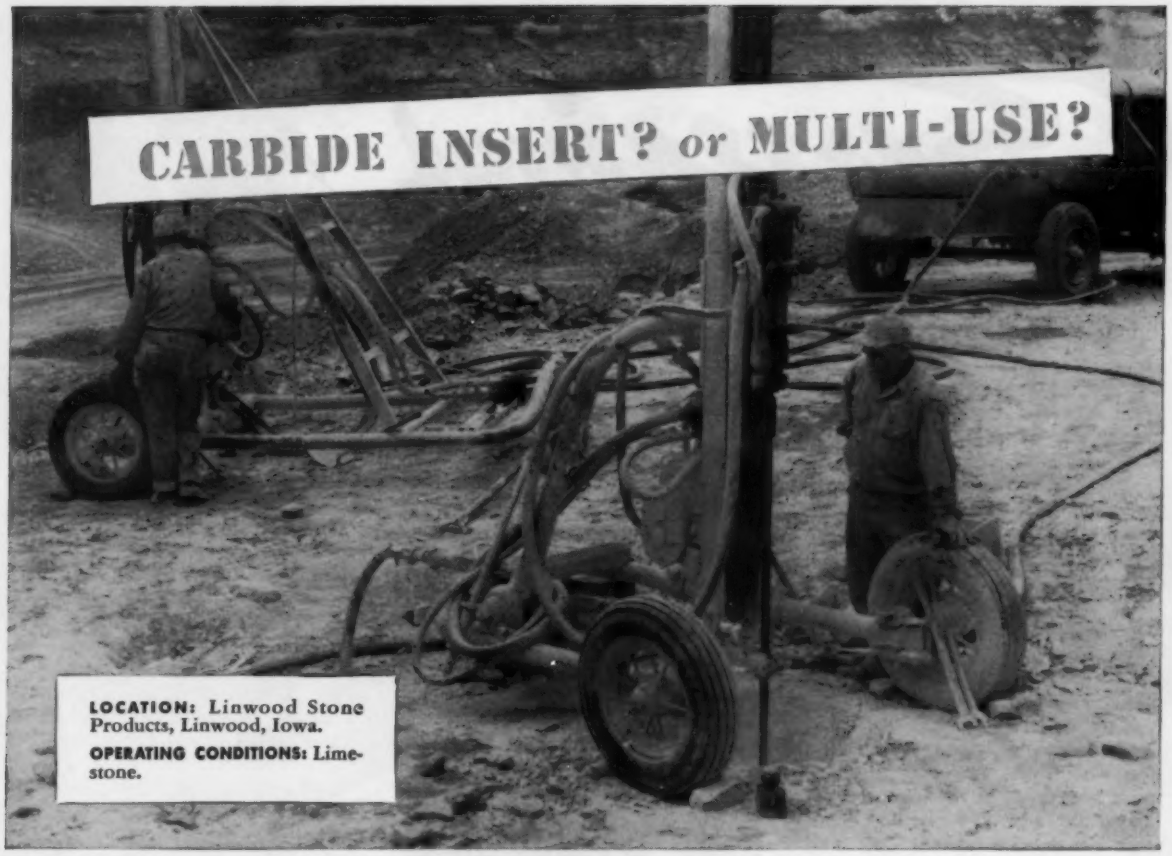
All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

Hendrix Lightweight DRAGLINE BUCKETS



Switch to wagon drills and TIMKEN® carbide insert bits cuts drilling and powder costs 1/3

. . . Reports Linwood Stone Products Co.

WHEN Linwood Stone Products Company switched from well drills to wagon drills, they also switched to Timken® DC and KC carbide insert bits. And they got extra depth before resharpening, fewer shattered inserts, and less binding in the small-diameter blast holes. The payoff: *drilling and powder costs were cut one-third.*

For small diameter blast holes, constant-gauge holes, and extremely deep holes—particularly in hard, abrasive ground—Timken carbide insert bits are your best investment.

But carbide insert bits may not be best for all your drilling jobs.

In ordinary ground, for instance, Timken multi-use rock bits are most economical. With correct and controlled reconditioning, they give you the lowest cost per foot of hole when full increments of steel can be drilled.

You can count on Timken rock bits to last longer because the special Timken shoulder union protects the threads from drilling impact. And both Timken carbide insert and multi-use rock bits are made from electric-furnace Timken fine alloy steel. No other rock bit manufacturer makes his own steel to give you extra quality control.

With Timken rock bits, you'll save time when you have to change from one bit type to another, because Timken carbide insert and multi-use rock bits are interchangeable in the same thread series. As the ground changes, you can change bits quickly and easily—right on the job.

For all your drilling jobs, profit from the more than twenty years of drilling experience you get when you call or write: Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

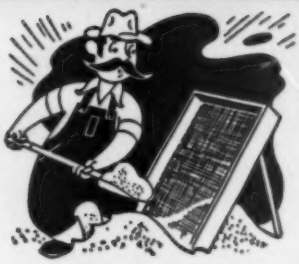
Timken threaded carbide insert rock bit

your best bet for the best bit . . . for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

Screenings



by Ray L. Smith Jr.

WHEN you read this column—assuming that at least one or two of our subscribers take a peek—Christmas will be only a day or two around the corner, and soon thereafter Father Time will be speaking his last lines for 1956 and tottering from the stage. Whatever you wished in your letter to Santa Claus, we hope will be yours in great abundance. Personally, we have cut too many notches in the cane to attach much importance to material things, but there is happiness to be had in the love of family, the fellowship of friends, and a oneness with God. You may think of us, if you think of us at all, as being on the farm, with the logs burning, the poodles at our feet and our beautiful Lenny in and out as the day progresses. With these blessings and old memories, surely our day will be as complete as the one we crave for all of you. From our heart, in the same old way we say it—A Merry Christmas and a Happy New Year to you all.

It Seldom Pays to Guess

MOST laughable typist's error (or was it a gamble?) we have seen in a long time came in a letter recently from . . . let's keep it a secret. Our friend had dictated "avoir-du-pois," and the girl played a long shot with "board of poise." We don't mention this to be ornery, but there's a lesson in it—a double one. First, it seldom pays to guess. Second, if you have a do or die secretary, you'd better read before you sign. In this case the joke was really on u.. We thought our friend was saying something fancy, which is out of our line, and wondered what the devil he did mean. Later we were enlightened.

Giant Schooner

ALTHOUGH it is doubtful that the 35-ton (5,000 gallon), B. Tournapull Rear Dump will ever replace the more conventional types of beer containers, here is a photo to prove that at least it was done once.

It all started when an inquiring reporter in Peoria, Ill., began asking the question, "what would you like best to do on a hot day?" The answer he got from one fellow—"swim in a tank of beer"—struck a responsive note at the city's biggest brewery.

All set to introduce a new brew (plenty of beer, bathing beauties and posters were already on hand) they jumped at the chance to grant the wish. The portable "tank" (all they lacked) was borrowed from the

neighboring Le Tourneau-Westinghouse plant.

Right away our agile brain was filled with all sorts of wonderful possibilities. Le Tourneau should seriously consider delivering each Tournapull filled to capacity; with the bathing beauties as standard equipment. We hold firmly to the belief that some models are just naturally more intriguing than others. Nevertheless we think our readers will agree that the unit pictured here has—well, just a little something extra.

Potpourri and Succotash

Some years ago a salesman appeared in court as a witness in a civil suit. "You say you're a salesman?" queried the judge.

"Yes, your honor."

"How good a salesman?"

The salesman squirmed in his chair, but in confident tones admitted, "Sir, I'm the best salesman the company ever had."

His friend, another salesman who was in the court room, was surprised, because the young man had always been modest and unassuming. When proceedings were adjourned, the older salesman asked him why he had made such a statement. The first salesman blushed. "I hated to do it," he explained, "but after all, I was under oath."

The wife was greatly pleased with her success at the women's meeting. On her return home she said to her husband:

"Yes I was absolutely outspoken at the meeting this afternoon."

Her husband looked incredulous. "I can hardly believe it, my dear, who outspoke you?"

An English cub reporter, frequently reprimanded for relating too many details and warned to be brief, turned in the following: "A shooting affair occurred last night. Sir Dwight Hopeless, a guest at Lady Panmore's ball, complained of feeling ill, took a highball, his hat, his coat, his departure, no notice to his friends, a taxi, a pistol from his pocket, and finally his life. Nice chap. Regrets and all that sort of thing."

Soon after admission to the hospital, Luke heard a knock at the door, and when he called, "Come in," a snappy little woman entered. "I'm your doctor," she said. "Take your clothes off, please." Luke asked if she meant all of them and she said yes. So he took off his clothes and she examined him from head to foot. When she was through, she said, "You may now get into bed. Do you have any questions?"

"Just one." said Luke. "Why did you knock?"

See the LATEST in BIG LOADERS at the Road Show

(SOUTH HALL — ALLIS-CHALMERS AREA)

new TRACTOMOTIVE TL-20 TRACTO LOADER

20,000 lb
2-cu yd capacity • 95.5 hp

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FULL POWER-SHIFT TRANSMISSION that enables you to go from any forward to any reverse speed instantly. You quick-shift "on the fly" — no stop-and-go shifting.

HAS—

HYDRAULIC TORQUE CONVERTER DRIVE that multiplies torque 350 percent . . . provides the smoothest loading action you've ever seen in a wheel loader. No butting or ramming, no engine stalls.

HAS—

- High Traction Differential with Pin-Connected, PLANETARY AXLES
- Tip-Back Bucket
- Rear-Wheel Power Steering
- 4-Wheel Drive and 4-Wheel Power Brakes
- Full-Flow Oil Filter
- Screen and Magnetic Filters in Hydraulic System
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- One-Piece Welded Frame

Only Tractomotive brings you all these operating and service advantages. You PAY LESS . . . You GET MORE.

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Labor Developments

Organized Labor and the Election

THERE is little doubt that each successive election shows increasing activity on the part of organized labor. Years ago, when the American labor movement was led by Samuel Gompers, the very simple rule, "Reward your friends and punish your enemies," served as a sufficient guidepost. They found it not too difficult to distinguish a friend from an enemy. And in any event, practically all that the trade unions did was to issue a list of endorsed candidates and let it go at that.

But at least since the Roosevelt Administration, the labor movement has been drawn more and more into contact with government. Labor has found it both necessary and desirable to participate far more fully than formerly in election campaigns and lobbying activities to influence legislation.

Despite dedicated effort along these lines, labor organizations appear to have met with less than perfect success. The recent election is no exception.

The record does not really demonstrate that labor leaders in 1956 have very much more control over the voting behavior of their members than John L. Lewis had in 1940. It will be remembered that in that year, after a falling out with President Roosevelt, Lewis not only endorsed Wendell Wilkie, but by radio broadcasts and all of the many other pressures which he is able to apply, he virtually demanded that his members follow his lead. In the subsequent election it was impossible to find any substantial labor defection from Roosevelt to Wilkie, even in counties in which coal miners constituted the bulk of the voters.

This year, Adlai Stevenson had the backing of almost every union in the AFL-CIO and most of the others as well. But President Eisenhower won by a landslide, and he could never have done that without heavy support from working men and women, many of them union members.

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.-Philadelphia, Pa.

This is not to say that the labor unions do not have any substantial political influence, but only that they are far less influential than the "viewers with alarm" believe.

The best place to test this theory was in elections where domestic and local questions played a more important role. In the Senate races, for example, the labor unions claim important credit for the re-election of Wayne Morse in Oregon, Warren G. Magnuson in Washington, Thomas C. Hennings in Missouri, and Alan Bible in Nevada; they also cite the defeat of Senator Duff in Pennsylvania by Joseph Clark, of Senator Welker in Idaho by Frank Church and of Governor Thornton in Colorado by John A. Carroll.

There is no doubt that large sums of labor union money went into these campaigns, principally those of Morse in Oregon and Clark in Pennsylvania. In addition to these areas, there is labor union strength in politics in states like Michigan, where most workers are organized by strong, politically active, and astute trade unions. There is no lack of evidence that the workers have strength in that state. The CIO leaders certainly were the principal force in re-electing Governor G. Mennen Williams for his fifth term.

But strength in one state, or even a few states, apparently does not mean that the unions have a large measure of influence over their members. The best evidence of this fact is seen in the history of the so-called "right to work" laws, which in one form or another include guarantees that workers will not be fired for refusal to join unions. Such laws, affecting non-agricultural workers, are found in the following 17 states: Alabama, Arizona, Arkansas, Florida, Georgia, Iowa, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, South Carolina, South Dakota, Tennessee, Texas, Utah, and Virginia. These laws are anathema to unions. Many union leaders have pledged to dedicate all their efforts to the repeal of the laws, which frequently are cited as the principal impediment to further rapid unionization.

Nevertheless, these laws continue on the statute books. In the last election the unions claim a victory in that another state, Washington, was prevented from joining the list. Here the voters sided with the unions and rejected a "right to work" proposal. To offset this gain, however, there is the case of Nevada, where despite large contributions by unions and much effort, the voters refused, for the second time, to repeal such a "right to work" law.

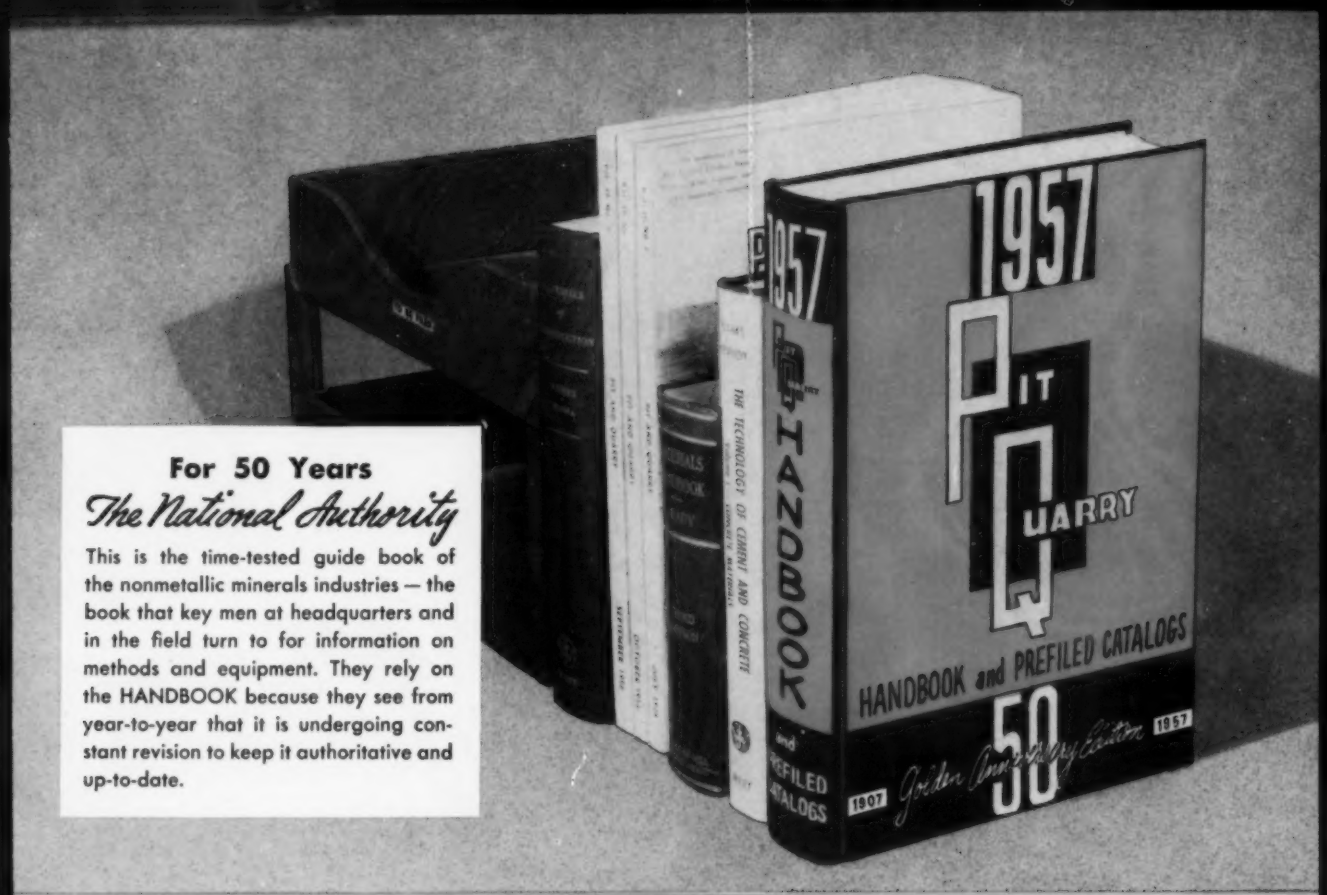
In the last election, therefore, except for a few spots, there was no tremendous showing of union political strength. No union leader "stuck his neck out" quite so far as John L. Lewis did in 1940, and thus none was so overwhelmingly rejected. Except where members are thoroughly convinced of the correctness of the leader's position, they appear to vote their own political conviction.

This is the only explanation for the fact that despite endless agitation for many years, no real groundswell has developed for the repeal or even for a substantial amendment of the Taft-Hartley law. It can almost be predicted with certainty that the next four years will see little or no tinkering with it. This is a piece of legislation which is loathsome and burdensome to the *leadership*, but apparently not to the *membership*.

Presumably, the "right to work" laws are in the same situation. They, too, make the union organizer's job more difficult, even impossible, if his cries of anguish are to be taken seriously. But unionized workers fail to get terribly excited about this, and potential union members appear to be indifferent, even hostile.

As active participants in the political battle, the labor unions are rela-

(Continued on page 104)



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The Standard of Quality Since 1909 for Gears • Pinions • Rolls • Wheels and Other Hardened Products

sprockets

Installed in Cement Plant (name on request) Aug. 1947 on head of aggregate elevator. Competitive sprockets lasted only 12 months. TSP superiority—5.7 to 1 to date, and showing practically no wear.

To illustrate just how this superiority is achieved, note this double sectional view of a "Tool Steel Process" sprocket. Both cutaway sections have a uniform full depth (1/6 to 1/5 distance across pitch line) hard case backed by properly refined core. TSP sprockets, by actual tests on file, will outlast ordinary unhardened sprockets by at least 5 to 1, will outlast other heat treated sprockets by at least 2½ to 1. In addition, their smooth, hardened, non-wearing surfaces greatly prolong chain life.

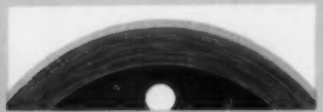
drum

Installed on crane at Calaveras Cement Co., San Andreas, Calif. After 4 years of service there is no sign of wear, three times the life of drums formerly used. The file hard surface means smooth, true grooves for extra long cable life.

The cross section of a TSP drum groove illustrated here, shows the depth and uniformity of hardness that gives smooth, true, wear resistant grooves. The grooves on TSP drums stay that way for years. Ordinary drums have soft groove surfaces. They develop wear, corrugations thus causing chafing, resulting in frequent costly cable and drum replacements. When you use TSP drums, your savings in cables alone will pay for the drums because to date no TSP drum has ever worn out.

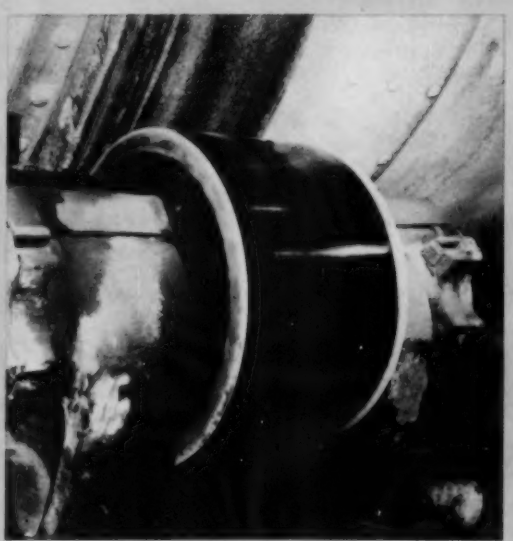
trunnions

Installed at No. 1 kiln at Petoskey Portland Cement Co. in 1940 prior to its acquisition by Penn-Dixie Cement Corporation. Installations on the additional kiln were completed in 1943. None have worn out to date. All 18 TSP trunnions are now in use. In addition to their long service life, they have been instrumental in smoothing the surface of the large tires.



The predecessor company wrote us " . . . . . on our #1 kiln we ran one (TSP trunnion) 7 years and one 8 years before replacing bearing . . . on #2 kiln we ran one 12 years and one 11 years . . . on #3 kiln, 6 years, 7 years, 8 years . . . on #4 kiln, 10 years, 8 years . . . also good results with both TSP rolls and shafts".

Cross section of TSP Trunnion illustrated shows depth of hardness resulting in phenomenal long wear and the core refined for toughness and ductility for maximum strength.



"Easy as filling a coffee bag," say men who prepare supply of Akremite.

Simple and safe to store, Akremite can be mixed right at the mine location.

"How We Cut Blasting Costs 50%, Increased Output 20%, with New Akremite Process"

Spencer prilled Ammonium Nitrate is base for new simple, safe, low-cost explosive

"We've found the new Akremite Blasting Process, now in use at our Cheshire, Ohio, operations, to be the ideal explosive for strip mining," reports F. H. Howe, Superintendent of Ohio River Collieries. "Because the ingredients are cheaper and the mixing process so much simpler, we have cut explosive costs 50% with Akremite. At the same time, better fragmentation produced by Akremite lets us move 20% more yards per month.

"The terrain in which we work is unusually difficult, but because Akremite is so safe and easy to handle, we still come out ahead."

☆ ☆ ☆

Akremite, the simple but revolutionary new explosive, is named after its inventor, R. I. Akre, superintendent of drilling at Maumee Collieries Co., Terre Haute, Ind. Akre uses prilled Ammonium Nitrate, produced by Spencer Chemical Company, as the base for his new explosive.

By itself, ammonium nitrate is not an explosive. But Akre found that if he mixed it with carbon black, packed it in a polyethylene bag, confined it in a drill hole and detonated it with a high gelatin dynamite and primacord, it produced a tremendous explosion.

Recently, an independent research organization put Akremite through a series of safety tests. They fired bullets into bags of freshly made Akremite. And they conducted the regular pendulum-friction and modified propagation-through-air tests.

Not a single explosion, fire or crackling resulted from any of these tests. Akremite with Spencer prilled Ammonium Nitrate is not only cheaper and better, but many mines report it is the safest strip mine explosive they have ever used.

(NOTE: Spencer Chemical Co. will be happy to provide you with further information about the Akremite Method as discussed by Mr. Howe.)

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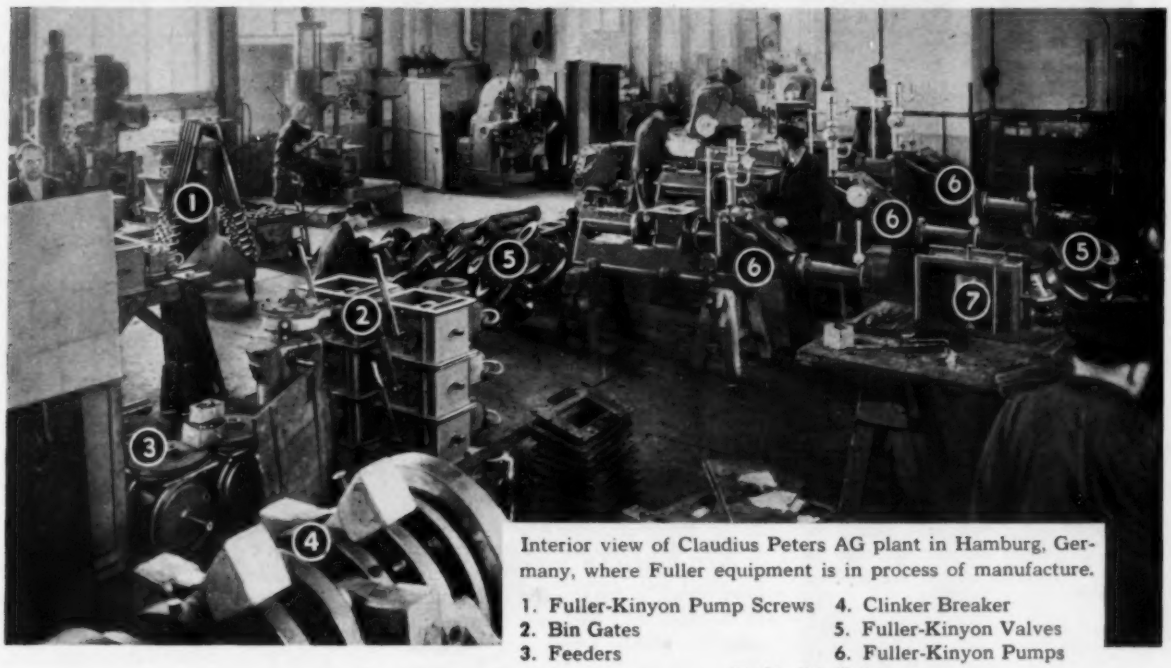

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N. V. S. Knibbs, D.Sc., the author of this article, was born in Sydney, Australia. He has been a consulting chemical engineer since 1919, and has traveled widely as a consultant in the field of limestone and related materials.

Contrasts

as observed on a tour of lime installations in many parts of the world

By N. V. S. KNIBBS, D.Sc.

Another P&Q Exclusive

A JOURNEY through three continents is sure to reveal strange contrasts in ways of life, but technical processes and methods generally present an uninteresting sameness unless the industry or trade is an old one. The lime industry is as old as history and, like brickmaking and agriculture, it can be and is carried on in communities in which machinery and implements are simple and primitive. Lime operations in different countries, therefore, reveal to the traveler differences in methods and contrasts in appearance of plants which are perhaps more striking than those to be seen in any other industry, but which yield a final product at costs which differ much less, from plant to plant, than might be expected, considering the great differences in technique. This is an account of things seen on such a journey.

Kenya and Uganda Tropical East Africa is, in many parts, a beautiful country but it is sadly deficient in limestone. Many of the known deposits were formed in fresh water and such limestones, at least in the tropics, are generally impure; they often contain

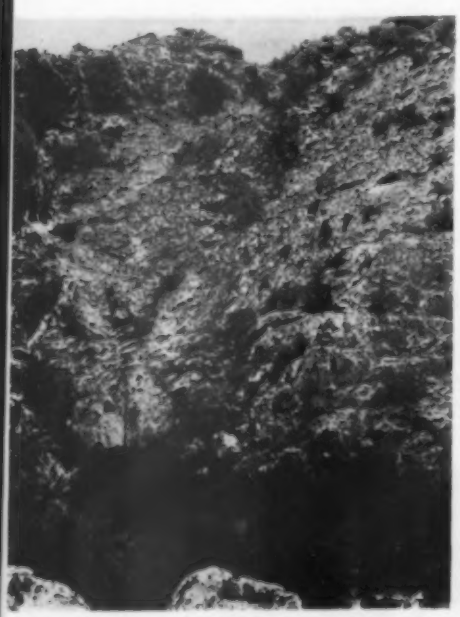

Fig. 1—Blue Pool, Buxton, near Taungs, Cape Province, South Africa. The rock is limestone (travertine).

Fig. 2—Mixed-feed lime kilns (using bituminous coal) at Buxton, Cape Province, South Africa.

phosphates and fluorides in quantities seldom, if ever, encountered in marine deposits. In Uganda, when cement was required for dam construction, a suitable limestone could not be found, and it was decided to use one containing phosphate, which had to be separated before the stone was fit to use. Physical methods of separating the phosphatic compounds in the rock having failed, it was decided to adopt the method of calcining to lime, hydrating, and air separating. The phosphate, or highly phosphatic lime, does not break down to a fine powder on hydration, and consequently a hydrate relatively free from phosphate is separated as fines by the separator and is used instead of carbonate in the cement mix. The cost of making cement in this way can be left to the imagination of the reader.

Wood is the cheapest fuel in many parts of Kenya and Uganda and it is the fuel used in burning most of the lime in those areas. This is fortunate because the limestones being used are easily overburned, and coal or oil would be more difficult fuels to employ without overburning.

The hazards of limestone quarrying seldom include that of attack from wild beasts, but caves in this deposit not far from one quarry are frequented by leopards.

In addition to its use in lime-burning, the rock is dressed and employed for construction. All quarry work is done by hand, including drilling, and the total cost of kiln stone is little more than that of rock won by the most up-to-date mechanical equipment in Europe or America. Yet these results are not due to sweated labor. When rates were raised because of a labor shortage, the result was merely to shorten the working week. When the native had earned the same amount as before the increase in wage rate, he stopped work. That amount sufficed for his needs, and he preferred leisure to more money.

The Union of South Africa In East Africa lime is used in sugar-refining in gold and copper mining, and for building purposes, but the total consumption is at present small. However, when one travels south to Johannesburg, the center of the gold mining industry of South Africa, the picture is changed entirely. Here such a large amount of lime is used in gold and uranium mining, in the production of calcium carbide, and in steel furnaces, that the industry is an important one. The two largest producers compare in size with the larger lime manufacturers of the United States.

Because nearly the whole of Africa is short of good limestone, the technical problems of the industry here have largely centered on the winning and preparation of the raw material, not on fuel and labor, both of which are cheap. Even where plants have been mechanized, it may still be necessary to use a large labor force to hand-pick the good from the bad limestone.

The gold-bearing rock of the Witwatersrand also carries pyrite, which oxidizes in contact with air and water and acidifies all the underground water. To save the pumps, pipelines, etc., from rapid corrosion, this water must be neutralized; hence, the use of lime.

The lime industry supplying the mines on the Witwatersrand has a history that is not without romance. Over huge areas of the Transvaal, parts of Cape Province, and adjoining territories, a highly crystalline dolomite of early geological age outcrops. Up to quite recently all the limestones used commercially were of secondary origin, having been formed from the dolomite by solution and reprecipitation. Small deposits in caves and on the surface of cliffs, known as "drip kalk" and "cliff limestone," respectively, are fairly frequent over the whole area.

Fig. 3—Gas-fired lime kilns at Zuikerbosch, Transvaal, South Africa, which supply lime for water treatment at the plant of the Rand Water Board.

Fig. 4—The blower, exhauster, and winch house at the Zuikerbosch lime kiln installation.

Fig. 5—A 100-ton-per-day mixed-feed kiln (using coke) at Lilydale, Victoria, Australia.

There are also considerable areas covered with impure "vlei limestone," supposed to have been precipitated organically in swamps, and sheet and nodular limestone, formed by evaporation of calcareous water.

The first large deposit of pure secondary limestone or travertine was opened up many years ago near Taungs in Cape Province, a name later to become known over the whole world by the discovery there of the famous Taungs skull. The deposit contains the only reliable spring (Figure 1) over a wide area, which probably accounts for the bones of lion, jackal, baboon, tortoise, and other animals found in the limestone, as well as the artifacts which are evidence of the activities of paleolithic man. Such has been the increase in the use of lime on the Witwatersrand that this deposit, once thought to be virtually inexhaustible, is now nearly worked out and the days of the kilns (Figure 2) are numbered. A plant of about equal size operates on another similar deposit of travertine.

Although the supply of high- calcium lime to the Witwatersrand, was until recently a matter of anxiety, reserves have now been assured for many more years by the discovery of areas of primary high-calcium limestone in what was formerly thought to be exclusively dolomite. A new plant, consisting of rotary kilns, contrasts favorably with the disorder of the older plants, which, although controlled by the large mining groups, exhibit none of the planned orderliness of the gold mines. However, there are modern gas-fired shaft kilns (Figures 3 and 4) built to supply lime and CO_2 gas for water treatment, which exhibit the better side of industrial development in South Africa.

Hydration of lime was originally used in South Africa as a device to produce carbon-free lime from small lime containing carbon derived from the fuel, the presence of carbon, even in minute amounts, being inadmissible in lime to be used in the recovery of gold by cyaniding. The quality of the hydrated lime produced, judged by the standards of America or England, was low, and, on the whole, it remains low.

Rhodesia Africa is a large continent. On a map of the whole country, Rhodesia seems only a short distance north of the Transvaal, but Bulawayo is 500 miles by air from Johannesburg, and the Copper Belt about as far again. Copper mining and smelting require lime, which has hitherto been supplied by make-shift plants located at the nearest limestone deposit. There is now a move to install more adequate plants in Rhodesia to avoid the necessity of importation, over more than 1,000 miles of railway, from the Union.

The quality of the known stone within reach of railroad transportation is not high. Much of it consists largely of a type containing recrystallized calcite, which crumbles or decrepitates on heating, and which is therefore difficult to calcine economically in conventional kilns.

Mauritius and Cocos Islands Traveling by air from Johannesburg to Sydney, the first night is spent in Mauritius, a beautiful island of volcanic origin, surrounded by coral reefs. Coral rock, raised as much as 40 ft. above the sea level by the elevation of the island, is a source of calcium carbonate and lime in an island otherwise composed of igneous rocks and schists. Mauritius was named and settled by the Dutch in the late 16th century but they abandoned it. In the 18th century the French resettled there and named it Ile de France. Although it reverted to its first name when ceded in 1810, its French laws and culture were for the most part retained, and it is now bilingual. Mauritius has a large rainfall and its fertility is such that almost all kinds of tropical produce can be grown, but a large part of the land is devoted to sugarcane.

From Mauritius to the Cocos Islands is the longest flight of any regular air service over an ocean having no land of any kind. This group of tiny islands is a typical coral atoll; it has all the beauty of Waikiki, without its hotels. The climate, except for occasional hurricanes, is ideal. The Cocos Islands, once exclusively coral, received such enormous accretions of pumice, washed up from the sea after the explosion of Krakatoa in 1883, that one might consider parts of the islands of volcanic origin.

Australia Going from Africa, a land of plentiful colored labor, to Australia, one finds a country that is exclusively white, where wages are high and hours of work short, and where fuel is correspondingly costly. Here one might expect to find the latest equipment for efficient lime production, mechanized to the last degree. Instead, one finds lime still being produced in batch flare kilns with wood fuel. There are also small rotaries and various types of shaft kilns, including one of unusually high capacity (Figure 5); but the continued use of methods which are extravagant in fuel and labor in this country is one of the mysteries of the lime industry.

Limestone in Australia is about as scarce as in Africa. In traveling over these geologically "old" continents it is hard to believe that, except for quartz, limestone is the most plentiful mineral in the crust of the earth. The first settlers at Botany Bay asked for limestone to be sent out from England as ballast, meanwhile using accumulations of shells found in the "kitchen middens" of the aborigines and oyster shells collected from the beaches. A little later they used coral from the nearby Norfolk Island.

Fig. 6—The quarry at Lillydale, Victoria, Australia. The dark rock (top) is basalt overburden.

As in South Africa, the drier parts of Australia have sheet and nodular travertine of recent age, formed by the evaporation of calcareous waters drawn to the surface by capillary action; and in parts of South Australia there is Tertiary Bryozoan limestone which can readily be sawn to shape for building purposes.

The deposits in Australia are not well placed for industrial use; and because transport is costly, both lime and cement are expensive at the major points of consumption. Perhaps this accounts for the small consumption of lime per head of population in a country which has large industries. One quarry (Figure 6), which is fairly well placed inasmuch as it is less than 30 miles from Melbourne, consists of a mixed limestone with a hard basalt overburden. After the removal of this overburden and quarrying of the limestone, it must be hand-sorted to be suitable for lime-burning; about half of the rock is discarded. Another quarry at Marulan in New South Wales, supplying limestone for the production of cement, is in precipitous country, which considerably adds to the difficulty of producing limestone at a reasonable cost.

New Zealand The limestones of New Zealand are fairly well distributed. Large quantities are pulverized and used for soil improvement, but many of them are sufficiently pure to produce lime of chemical quality. Some of the purer stones are superficially similar to soft sandstone, and break down to a sand on handling and, still more, on burning to lime.

Here industrial uses of lime are confined mainly to its use in the removal of the wool from sheepskins, in sugar refining, and in the building industry, the last-named being limited by reason of the widespread use of timber in home construction. However, the use of brick is increasing; and the special properties of the pleasantly colored, easily cut Oamaru stone (Figure 7), a Tertiary limestone which is like a warmly tinted oölitic stone, has long made its use a feature of local building. It is interesting to see this material being used in the construction of outbuildings, garages, etc., whereas, in other countries such dressed natural stone is used only in the more costly forms of construction, such as public buildings.

A similar rock, but still more friable, is quarried nearby (Figure 8) by harrowing the surface, bulldozing, and using a dragline scraper

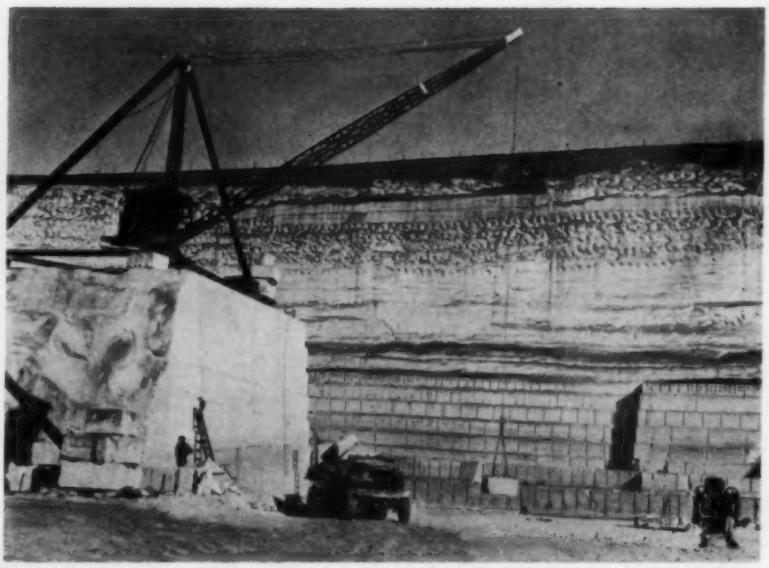

Fig. 7—A limestone quarry near Oamaru, New Zealand. The rock is sawn into large blocks, then to the size required for structural work.

Fig. 8—Rock taken from this limestone quarry near Oamaru, New Zealand, is so soft that it can be harrowed. A dragline conveys it down the slope to the mill.

Fig. 9—The kilns, hydrating plant, and related installations at Kakanui, near Oamaru.

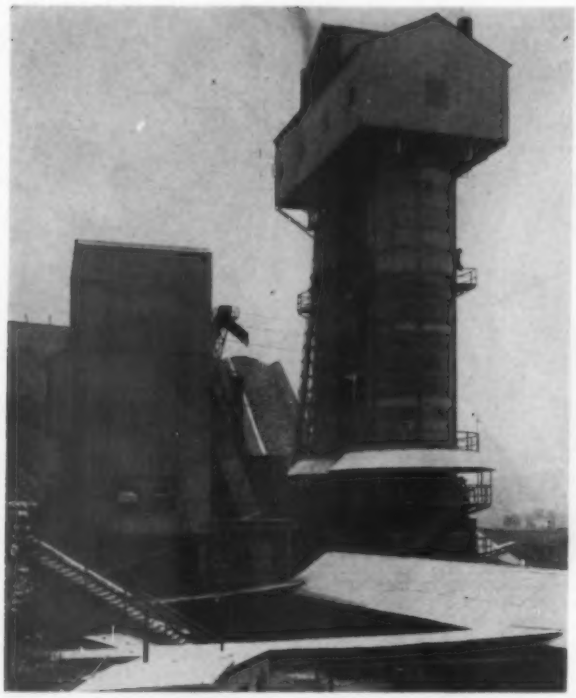

Fig. 10—Two producer-gas-fired kilns at Horton, Yorkshire, England, each of which produces 110 tons a day.

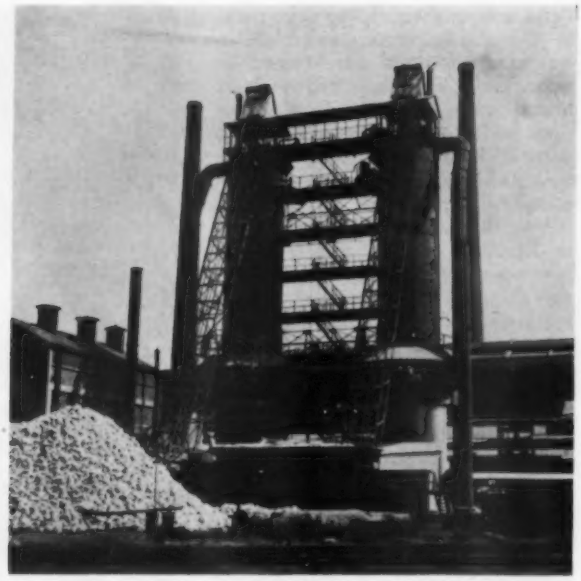

Fig. 11—Two gas-fired kilns at a steel plant in France.

to draw the broken rock to a hammer mill, where it is reduced to the fineness required by agriculture. The use of limestone especially for the improvement of grassland is promoted by its free transport on the state-owned railroad, a concession which evens out the financial inequality caused by the fortuitous distribution of limestone.

New Zealand has a long coastline, and most of the larger towns are on the coast. The "freezing works," which deal with sheepskins, are mostly located along the coast for loading directly into ships. Consequently, a large proportion of the industrial lime (nearly all of it hydrated lime) travels to its destination by water. The size of the shipments and the uncertain schedule of the shipping companies make it imperative to carry large stocks of hydrate ready for immediate shipment. At one plant (Figure 9) the storage space for bagged lime is many times the weekly output. The transportation of hydrated lime is an important part of the activities at the port of Oamaru.

The United States What impressions of the lime industry are gained from a visit to this land of rapid change after a four-year absence? Predominantly one of surprisingly little change. The incentive to economize in the use of fuel, which seemed to be gaining ground in the years after World War II, is now less evident, due perhaps to the ever-widening availability of cheap natural gas. A few more rotary kilns have been installed, and the output of some older rotaries has been increased; but lime is still being burned with extravagant thermal usage, and at a cost that to the European lime-burner seems high. When a lime man from Europe tells an American what his fuel costs him, and in spite of that high cost per ton of fuel, at what price he sells his lime, it is only the politeness of the American to a visitor which prevents his openly expressed disbelief. The wide availability of natural gas at a low price—often less than half the equivalent cost of coal in England—is a boon to industry in America, but it may be responsible for an attitude that, to a visitor, seems an indifference to thermal efficiency.

Still more surprising, the fluidized bed kiln in New England, with the outstanding results in the quality of its product, its economy in fuel, mechanical operation, and completely automatic control, has not been adopted by the industry elsewhere, although it has been in successful operation for a decade.

There seems, indeed, to be a world-wide lack of enterprise in the lime industry; and the industry in the United States is no exception. In England the large mixed-feed kiln-burning bituminous coal has held the field for over 50 years. It is mainly the probability that the public will soon cease to tolerate the emission of huge volumes of black smoke, plus the threat of the steel industry to burn its own lime with gas, that will bring about a general change of method.

In the United States the rotary kiln replaced the small furnace-fired shaft kilns, which were formerly a feature of American lime plants, and the improved economy seems to have satisfied the industry in spite of its high capital and operating cost, compared with those of kilns used elsewhere in the world. It certainly produces a well burned lime of a grade suited to the majority of uses; but in addition to high cost it is not adaptable in the quality of its product.

A feature of the industry in America today is the enormous difference in design and layout between plants which are in competition one with another. There are large fully mechanized plants with rotary kilns and, competing with them, and apparently holding their own, small plants employing shaft kilns often of obsolete design. The concentration into large units, which was a feature of the industry between the recent wars, appears to have been halted and the trend perhaps reversed. This is surely a sign of health, and there is an opportunity for smaller plants

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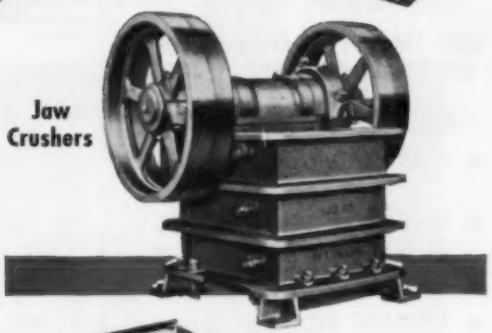
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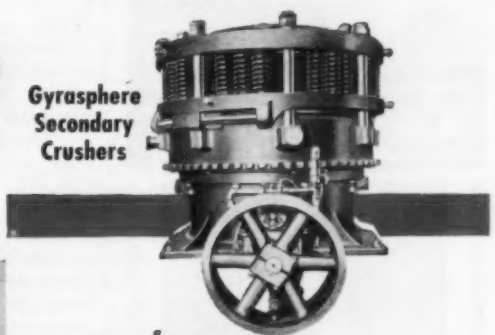
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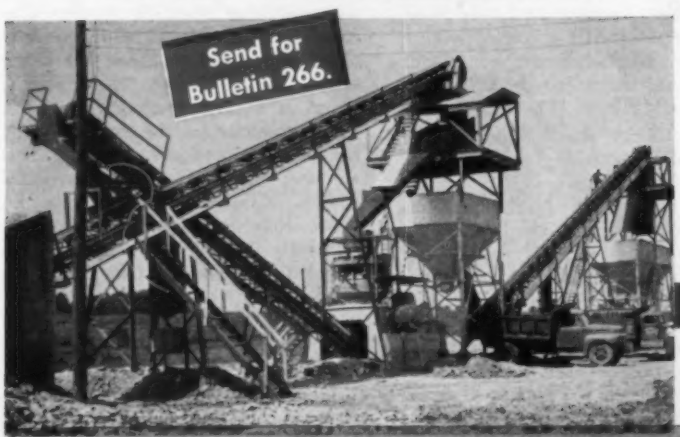

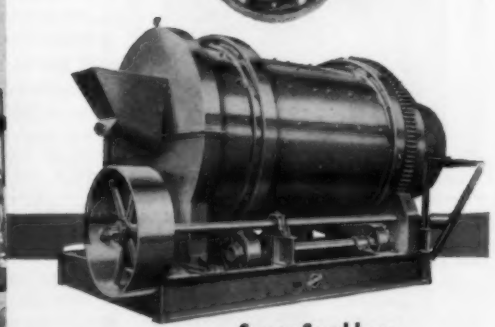
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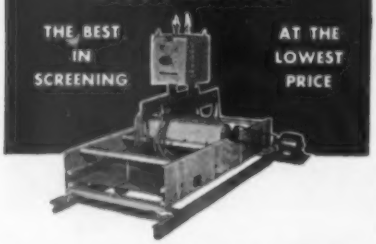

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Fig. 12—An oil-fired kiln in Sweden, where this fuel, now often pre-gasified, is widely used. The brick-encased kilns are also oil-fired.

to improve their economy without incurring heavy capital expenditure.

Great Britain and Europe Absence from a country and the inspection of the industry in other lands assist one in a reappraisal of that at home. The lime industry in Britain has, on the whole, had a prosperous time in the last ten years; but with a few exceptions, it has done relatively little to modernize its lime-burning equipment.

Manpower shortage has forced the widespread mechanization of stone-getting, and the high cost of equipment has made it difficult to finance the replacement of old kilns. However, a start has been made (Figure 10). There has also been an expansion in the production of lime for its own use by the steel industry, using surplus blast furnace and coke oven gases as fuel. In France, where bombing caused considerable loss of equipment, there has been similar rebuilding (Figure 11).

In Germany the rebuilding and expansion of the steel industry has been unprecedented, and a similar expansion of lime production has been necessary. The need for additional production has been met mainly by the installation of Seeger kilns, using coke as fuel. The distinctive feature of these kilns is the charging device, which insures correct distribution and proportion of fuel to stone. This kiln has high capacity and very low fuel consumption, but its successful operation depends on the use of metallurgical coke, which is costly and in short supply; and the quality of the lime produced is not of the highest. For these reasons gas-fired kilns are coming into prominence in Germany. Attention is particularly being devoted to burning small stone (3-in. downwards) in shaft kilns, under conditions which are designed to combine quality with low fuel consumption.

Elsewhere in Europe, and particularly in Scandinavia, oil-fired shaft kilns are much used, but it is only recently that the fundamental problem of applying oil to a shaft kiln has been solved. Success lies in pre-gasifying the oil, without carbon deposition, so that the kiln becomes, in effect, a gas kiln (Figure 12).

European lime manufacturers would do well to study the drive with which new uses of lime are developed and exploited in America. In England the industry has done little to promote new uses, nor even to avoid losing such long-established users as the building trade. The formation of a comprehensive national lime association, of the same scope as the N.L.A. of America, seems as remote as ever. Surely the time has come for the establishment in each country of an association working with the closest international liaison. Considering the valuable work done in countries with such relatively small populations as Sweden and South Africa, the possibilities of co-operative or co-ordinated work seem boundless. Who will provide a lead?

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The semi-annual meeting of the National Industrial Sand Association at The Greenbrier, White Sulphur Springs, W. Va., held October 16 through 19, 1956, was the best attended of any Fall meeting in the history of the association. This can probably be attributed to the excellent program and to the fact that the industry is at present faced with a number of serious problems. The popularity of this outstanding resort must also be given credit, with its complete facilities not only for meetings but also for all kinds of recreation.

The program was featured by talks on important subjects by outstanding authorities in these fields. Among the speakers were Theodore C. Waters, N.I.S.A. counsel, and John T. Sapienza, tax counsel. There was another edition of the popular Washington Report by Vincent P. Ahearn, executive secretary, and a radio-type panel discussion on advertising and sales problems which presented much interesting and valuable information.

A feature of the meeting was the discussion of *Basic Insurance for a Silica Sand Company* by Frank C. Wachter (Pennsylvania Glass Sand Corp.). This paper was scheduled because discussions at earlier meetings had pointed to every member company the importance of reviewing its insurance portfolio. Mr. Wachter did such an excellent job of presenting this subject completely but concisely that we are reprinting it in full elsewhere in this issue. Attention is directed in particular to two of his statements: that some risks inherent in all businesses are "beyond the protection afforded by the principles of insurance," and that "insurance is not a substitute for prevention" of accidents. Mr. Wachter emphasized his conviction that "a sound accident prevention program will be paid for by the premium savings that follow."

In a brief report, Theodore C. Waters, association counsel (Miles & Stockbridge, Baltimore, Md.) told of the growing practice of injured employees' suing not only the company but its officers as well. The Workmen's Compensation laws are intended to keep all compensation under them but actually most state laws permit such suits. Only a few states now bar suits against individual executives, and the answer to the problem is probably to get other states to take the same action. Mr. Waters urged each producer to go to his insurance carrier and try to obtain a rider to the company policy which would protect the officers.

Mr. Waters also pointed out that all but four state legislatures will be in session. More benefits for workmen are anticipated, and all producers should follow developments in their states.

Percentage depletion developments were described by John T. Sapienza, tax counsel for the association. The congressional sub-committee on internal revenue taxation, he said, plans to consider percentage depletion from an overall basis. A series of 12 hearings will be held beginning in December, and this issue may become important. The long-expected 1954 Code regulations are not yet out but are expected soon. Then 30 days will be allowed for any recommendations from the industry.

Emory M. Durstine, president, N.I.S.A.

The report of the Traffic Committee presented by its chairman, William J. Woods Jr. (Pennsylvania Glass Sand Corp.), warned members that the present car shortage is going to get worse. This holds for both open and closed cars. Box car loadings, he said, are down from 1955, but there is a serious shortage of covered hoppers. The railroads are building many new cars and repairing many, but even so, they are just holding their own. In the last year 5,000 new cars were built, but 51,000 old cars were retired from service. The shortage is attributed to increasing shipments of coal, of steel pipe for oil fields, gas lines, etc. When the new highway program gets well under way, said Mr. Woods, the increased cement and aggregate requirements will make conditions even worse. The only answer is an accelerated new-car program.

Mr. Woods also commented on the petition for increased demurrage charges filed by the carriers with the ICC on June 28. They are asking for increased charges not only for week days but also for Saturdays and Sundays. The carriers plead increased cost of maintenance and repair and they also claim that higher charges would encourage quicker turnaround and help alleviate the car shortage. Action was originally to have been taken by August 1 but has been postponed to March 1, 1957, and hearings began on November 6.

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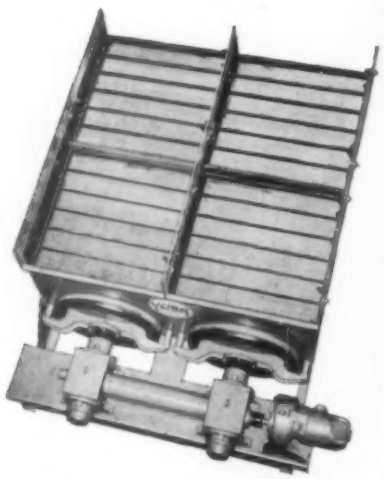

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A petition was also filed on September 7 for higher freight rates in several sections of the country. In most areas a 15 percent increase is asked, but in a few places it is lower. Hearings will be held on January 15. Mr. Woods said that the recent 6 percent increase should be sufficient as the railroads are now in much better financial condition. Any further increase, he said, would only divert more traffic to trucks.

William J. Cannon, N.I.S.A. vice-president.

The report of the Committee on Fineness and Grading of Foundry Sands was given by W. D. Chadwick (Manley Sand Co.), chairman. Segregation of sand, he said, is a new problem, and a subcommittee has been formed to gather all possible information on this subject. A further report will be given at the next joint meeting with an A.F.S. committee, probably in January.

A colored motion picture was shown of interesting segregation tests made in a model bin, which consisted of a box 12 in. square and 48 in. high, with glass sides and a plexiglass bottom. This device had three feed holes in the top—1 in the center and one at each side—and 16 discharge holes in the bottom. Colored silica sand was used—red for the 20- to 40-mesh size, white for 50- to 100-mesh and blue for 70- to 200-mesh.

A wide variety of tests was made for almost every conceivable combination. In every case the coarser red grains went to the outside, regardless of where the sand was fed in. Also in every case the red sand went to the outside of the reclaiming belt conveyor under the box, regardless of how it was discharged. Again, in every case the blue finer grains came out first. Most foundries feed in at one side and discharge through a single opening at one side or the other, and this method was shown to cause maxium segregation.

When the sand was fed in through multiple holes, individual cones formed under each hole with only minor segregation in each. Discharge through multiple openings also gave the minimum of segregation. This was further proved by placing horizontal layers of white and colored granules alternately. Discharge through the multiple holes was even until near the bottom, when individual cones formed.

In the report of the Advisory Committee on Health Earle T. Andrews (Pennsylvania Glass Sand Corp.), chairman, described the seminar of the American Hygiene Foundation in June. This event was so successful that another meeting will probably be held in June, 1957. A similar program will probably be planned with the first day devoted to the effects of dust on the lungs; the problem of noise; and heart problems; and the last two days devoted to technical instruction on dust suppression. These seminars, said Mr. Andrews, bring closer to producers and their operating personnel the facts on silicosis.

Chairman Ralph S. Lebold (Michigan Silica Co.) in the report of the Advisory Committee on Labor, said that the labor supply is better and turnover is decreasing. The unions, he said, have been successful in getting wage rates increased enough to compensate for the shorter hours worked. They are also getting more paid holidays, and pressure for incentive plans is strong.

The Committee on Navy Blast Sand Specifications, according to Chairman Arthur B. Schlesinger (New Jersey Pulverizing Co.), is drawing up test specifications for sand for ship hull blast cleaning which all producers can meet. These will be submitted to the Navy when completed. The importance of this market is evident from the fact that one Navy yard alone uses 20,000 tons annually.

A multimillion-dollar expansion of the Missouri Portland Cement Company plant near Sugar Creek, Mo., will double its capacity. This expansion program, in addition to a large project completed in 1954, reportedly will make this cement plant the largest of its type between St. Louis and the West Coast.

National Slag Association Lists Safety Contest Winners

IN THE National Slag Association Safety Competition conducted by the U. S. Bureau of Mines, highest safety honors were awarded to the Duquesne plant, Duquesne Slag Products Company, Pittsburgh, Pa., and to the Portsmouth plant, Standard Slag Company, New Boston, Ohio. In this seventh year of the contest, conducted by the Bureau and sponsored by the association, the winners were awarded bronze plaques, provided by PIT AND QUARRY magazine. The safety contribution of each employee and official of the winning operations was recognized by the award of individual Certificates of Accomplishment in Safety by the Bureau of Mines.

Group A—Plants operating 60,000 or more man-hours—The Duquesne plant, Duquesne Slag Products Company, was the winner of the plaque in this group. The plant was operated 140,298 man-hours without a lost-time disabling injury during the slag year—April 1, 1955, through March 31, 1956. The Duquesne plant entered the National Slag Association Safety Contest in 1949, and during five years of steady participation, was worked 841,690 man-hours with only 12 injuries to its employees. The frequentcy of injuries per 1,000,000 man-hours for this period was 14.257, and the severity of injuries per 1,000 man-hours for the same time was 0.266. Both of these rates were well below the over-all rates for all contestants for the same duration. However, 1955 was the first time that this plant reached the winner's circle, and special commendations are due to all employees of this operation for their try-and-try-again attitude.

This group had 13 contestants with injury-free records for 1955 which, including the winner, ranked from 1 to 13 in order of man-hours of exposure during the contest period.

Group B—Plants operating less than 60,000 man-hours—The Portsmouth plant, Standard Slag Company, New Boston, Ohio, took up safety honors in the Group B of the National Slag Association Contest for having worked 58,986 man-hours without a lost-time disabling injury, and for this outstanding record received the PIT AND QUARRY plaque. This plant was a participant in all seven years of the competition, and in six of these years was operated with an injury-free record. However, this is the first year it was awarded the coveted plaque, and it was the first time the plant has worked sufficient man-hours to qualify for top honors in the group. Its seven-year participation shows a record of only two lost-time injuries, indicating a low frequency rate for the over-all period of 7.467 and an extremely low severity rate of 0.455 for 267,861 man-hours of operation.

In addition to the trophy winner, ten other plants in this group operated during the contest year without a disabling lost-time injury; however, the Portsmouth plant attained top safety honors for having worked a greater number of man-hours than any other injury-free operation in the group.

Injury-free operations—The following plants, excluding the trophy winners, were awarded Certificates of Achievement in Safety by the Bureau of Mines. They were operated 20,000 or more man-hours without a lost-time injury. In addition to these plants listed below, there were four plants with injury-free records that did not receive the certificate-awards because they did not meet the minimum requirements of operating 20,000 man-hours during the contest year.*

Weirton plant, Standard Slag Company, Weirton, W. Va.
Plant No. 1, Buffalo Slag Company, Inc., Woodlawn, N. Y.
Foamed slag plant, Bethlehem Steel Company, Sparrows Point, Md.
Fairfield Plant No. 5, Birmingham Slag Company, Birmingham, Ala.
Dock No. 8 plant, The Cleveland Slag Company, Cleveland, Ohio.
Lordstown plant, The Standard Slag Company, Lordstown, Ohio.
Sharpsville plant, Cambria Slag Company, Sharpsville, Pa.
Woodward plant, Woodstock Slag Company, Woodward, Ala.
South Deering plant, Illinois Slag and Ballast Company, Chicago, Ill.
Midland plant, The Midland Slag Company, Midland, Pa.
Ashland plant, The Standard Slag & Stone Company, Ashland, Ky.
Johnstown plant, Cambria Slag Company, Johnstown, Pa.
Converter iron and lightweight plants, Birmingham Slag Company, Birmingham, Ala.
Alabama City mill plant, Birmingham Slag Company, Birmingham City, Ala.
Benwood plant, The Standard Slag Company, Benwood, W. Va.
Erie Plant No. 5, The Buffalo Slag Company, Inc., Erie, Pa.
Aliquippa plant, Duquesne Slag Products Company, Aliquippa, Pa.
Brier Hill plant, The Standard Slag Company, Youngstown, Ohio.
Jackson plant, The Standard Slag Company, Jackson, Ohio.
Chicago plant, N. D. Connelly Interests, Chicago, Ill.
Thomas plant, Birmingham Slag Company, Birmingham, Ala.
East Chicago plant, Indiana Slag Company, Inc., East Chicago, Ind.

*Plants are listed in order of maximum to minimum number of man-hours worked.

Injury experience—The aggregate injury experience of the 49 competing plants in the 1955 National Slag Association Safety Competition revealed that both severity and frequency improved over those of the previous year. The injury frequency rate of 13.054 was lower than the 13.896 rate for 1954, while the severity rate of 4.259 for 1955 was a decided improvement over the 6.232 rate recorded in the 1954 competition.

The competition — The Safety Competition, sponsored by the National Slag Association and conducted by the Bureau of Mines, is open to any slag-processing plant. It covers worktime and injuries during the contest year (April 1 of one year through March 31 of the following). Enrolled plants are classed in two groups according to the man-hours worked in the plant.

A plant may be enrolled on application to the Branch of Accident Analysis, Division of Safety, Bureau of Mines, Washington 25, D. C.

After enrollment, eligibility is maintained by forwarding a monthly summary of man-hours of employment and a complete report for each lost-time or disabling injury occurring at the plant. Report forms are supplied by the Bureau of Mines or copies of reports prepared for compensation commissions or insurance carriers may be used to report data relating to disabling injuries.

The second conference of Kansas limestone producers was held at Lawrence, Kans. The meeting was sponsored by the University of Kansas (Extension Department), the Kansas Limestone Association, and the Geological Survey of Kansas.

Pacific Coast Aggregates, Inc., San Francisco, Calif., has changed its name to Pacific Cement & Aggregates, Inc., since taking over the Santa Cruz Portland Cement Company.

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MAINTENANCE Must Be Planned

By ERNEST W. FAIR

A DAB of oil here—a twist of a wrench there—a tightening of a belt—adjustment of tension now and then—all of these constitute maintenance of a sort—*the wrong sort!*

All are haphazard. *Good* maintenance is never haphazard; it is planned and carefully programmed in even the smallest organization. Without such planning and programming, equipment life is wasted, profit dollars are allowed to be frittered away, and costs rise on every piece of work done by the firm.

Maintenance planning belongs in even the smallest firm. It should be set up and regulated to fit the equipment and schedules, for no two firms are exactly alike in equipment or equipment use. The adoption of a schedule set up for one firm may be utterly useless and wasteful in another.

However, there is a basis upon which each maintenance program should be built. The basic plan presented in the following paragraphs will enable any company official to set up an adequate program of his own. It suggests the pertinent points to be adapted to his organization in drawing up his own custom-made maintenance plan.

1. **Responsibility** — Determining just who will be responsible for the application of the program after it has been drawn up is essential. The program will falter, no matter how good the plan may be, unless definite responsibility is assigned to one individual in the organization. A definite degree of responsibility must be delegated every man on the staff who uses company equipment of any kind. Each one should know and understand the maintenance plan and particularly his own part in carrying it out.

2. **Financial support** of the plan is vital. The program should always include plans for this phase of maintenance. The sums allotted for upkeep should be sufficiently flexible to take care of unusual conditions and circumstances.

Approval of management may well be required under the program, if the estimated cost of labor and materials exceeds a certain amount, and thus a degree of control is retained over the cost of the program. Minor expenditures can best be left to persons concerned with maintenance in order to avoid useless and endless record-keeping chores on the part of the company official in charge of the maintenance program.

It is extremely difficult to set up a fixed sum for maintenance since breakdowns, unforeseen high production schedules, and other factors may cause wear and tear on equipment well ahead of schedule. The budget set up by the management should, therefore, have a degree of flexibility which will allow for the unforeseen.

3. **Maintenance records** are vital to every good program. They should be set up at the very start and maintained as carefully as are the records on receipts and expenditures in the front office. The best procedure is to set up for each piece of major equipment the firm owns an individual card record detailing the maintenance history of the item. Usually such records are kept in the office of the person in charge of the maintenance program and are maintained by him.

4. **Work schedules** for periods directly ahead should be a part of the program. These should be made up on three classes of work: (1) jobs which can be definitely well planned ahead, such as inspections and routine jobs; (2) jobs which may vary with conditions but nevertheless must be fitted in at approximate times; and (3) jobs which must be done as emergencies arise. Flexibility in the master schedule is needed to handle the latter type of maintenance jobs.

5. A good **tickler file** is also a vital part of any company maintenance program. This should be arranged to present work orders and data on forthcoming jobs to be done. Such a file should show all such maintenance jobs that have been definitely scheduled for fixed dates with accompanying "check" spaces for initialing jobs which have been done. A warning system is also an aid in such a file. An additional card of another color may be set up from a week to two weeks ahead of each date, so that any preliminary planning required can be done and needed parts can be ready for each routine maintenance job on the scheduled date.

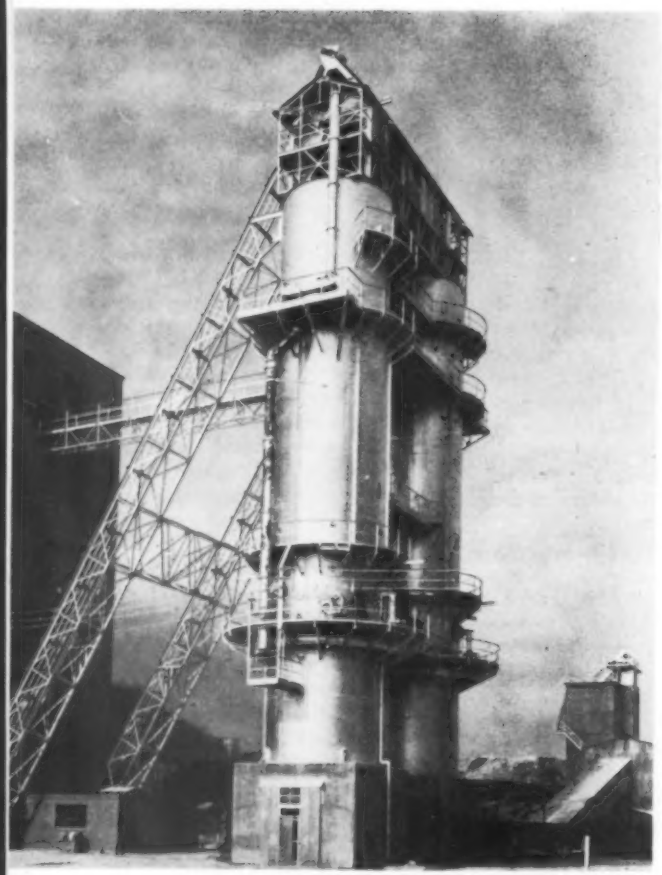
6. **A daily work program** is the next step in the schedule. This should be made out from the outline of work ahead, and emergency jobs for which orders or requests have just been received at that particular time should be worked in. Without such records, maintenance easily becomes haphazard: but if records of this type are at hand, even the minutest maintenance procedure acquires fixed standing and responsibility and is certain to be handled properly at the right time.

7. Maintenance **materials requirements** should also be calculated when the program has been set up. When this procedure is followed, control of cost of maintenance is much closer. Those concerned will be assured that funds will be available for maintenance work as it arises and that nothing need ever be "put off" because of the lack of funds at any particular time. Failure to provide for maintenance materials is one of the major omissions in the maintenance programs of many firms. Each day that needed maintenance is postponed, the future life of that particular piece of equipment is shortened by that one day.

8. Obtaining the proper **information and data** for correct maintenance is also an important part of a workable program. A file of service and maintenance data, as supplied originally by the manufacturer of each piece of equipment, should be set up. If these records have been lost, replacements should be secured immediately. This practice helps to avoid mistakes in maintenance which can sometimes be as costly as the lack of any effort to perform maintenance work.

Such a file should also contain lubrication charts and other maintenance data from every possible source. Information carried in the pages of this magazine from month to month should be kept available. Such material will prove useful not only for routine maintenance procedures but also as a source of data in an emergency, when there is no staff member having experience in handling that situation.

(Continued on page 104)



Ash Grove Lime Of Their Type In America

other improvements made at Galloway lime plant

By BUREN C. HEROD

Erected as twin units, these large shaft lime kilns at Ash Grove's Galloway plant stand 128 ft. high. Charging skip inclines and kiln feed bunkers are seen at the left.

Another ON THE SPOT Report

IN recent years, the Ash Grove Lime and Portland Cement Company—a long established producer in the two industries represented in its name—has undertaken many steps directed toward increasing capacity at its Galloway lime plant near Springfield, Mo., and improving operating efficiency.

Impressive evidence of the effort expended on the calcining operation is displayed by the installation of the large-shaft Priest kilns now in production. These are the first such kilns to be installed on this continent, although many are in operation in England and in other parts of the world.

Not as readily apparent, but nevertheless of considerable importance to the overall modernization plan, is the incorporation of new and unique equipment for the production of high-plasticity Type S hydrate, the enlargement of chemical laboratory facilities, the installation of electronic devices for quality control at departmental levels, and the adoption of new quarrying procedures and equipment, including a new high-speed blast hole drill. This drill is said to be the first rotary down-the-hole type unit sold west of the Mississippi.

Development of new hydration equipment, carrying the Ash Grove trademark "Hydraclave," has made possible the production of a highly plastic hydrate from high-calcium lime—a product long sought by the lime industry. The new product, known as "SLIK" Type S lime, is the culmination of extensive research efforts on the part of the company engineering staff and the Midwest Research Institute of Kansas City.

The record of activity at the Galloway plant, especially since 1939, illustrates the company's constant interest in the improvement of calcining techniques. While for many years, six shaft kilns had been in operation at this site, these, following the installation of a rotary kiln in 1939, were shut down. After a period of time, it was found that lime produced in the rotary unit did not prove as acceptable as shaft-kiln lime for building trades consumption—a market which consumes about 50 percent of the Ash Grove lime production.

In 1944 calcining was again undertaken in the original steel shaft kilns and specially-constructed concrete shaft kilns. However, production limitations led company officials to continue investigating the possibilities of other shaft kilns with potentially higher output.

After a survey of available designs in this country, Paul Sunderland, chairman of the board, and others in the Ash Grove organization became interested in the large shaft kiln design of Priest Furnaces, Ltd. Various installations of this type of calciner were visited in England.

Although the English units were designed to use coke-oven or blast-furnace gas, it was decided that these calciners, revised to use natural gas as a primary fuel and oil as a standby fuel, would provide the higher capacity desired; and engineering revisions were initiated through the Canadian agent of the English firm—the Holbeck Company, formerly owned by H. L. Hall.

Installation of the two new kilns was started in 1951 and completed in the following year. Other equipment and construction pertinent to the new calcining operation were also added at that time. Included

Installs First Shaft Kilns

An overall view of Ash Grove's Galloway lime plant near Springfield, Mo.

were additional conveying facilities and two large concrete bunkers for kiln feed stone which were designed by the Ash Grove staff.

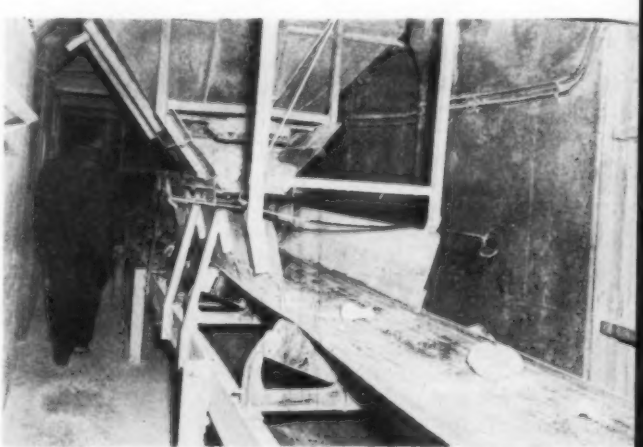
While, as previously mentioned, the large new shaft kilns represent an imposing installation, their successful and economical operation depends to a great extent on the efficient and versatile flow of raw mtaerial from the quarry to other processing, including that of the new calciners.

This flow is initiated with the Ingersoll-Rand rotary down-the-hole drill recently installed in the quarry. Using 6¼-in. bits sinking 60-ft. holes with 18-ft. spacing and a 24-ft. burden, this unit has produced 25-ft. of hole per hour, a figure which includes moving time. With 700 impacts per minute, bit life of 6,500 ft. has been realized.

With various explosives employed in blasting operations, approximately 1½ tons of stone are brought down per pound of powder consumed. The broken stone is loaded into three 15-ton end-dump Euclid trucks by either of the two 2½-cu. yd. quarry shovels. On the one-shift quarry operation approximately 2,000 tons of rock is delivered to the primary crusher hopper.

From the hopper, the stone is transferred on a 60-in. by 30-ft. Stephens-Adamson feeder to the crusher—a 60-in. by 48-in. Allis-Chalmers Superior jaw with an 8-in. setting. The crusher discharge is received on a 48-in. belt and transported to a 4-ft. by 10-ft. Telsmith screen equipped with a 4-in. square opening screen deck. Separation of this screen is about evenly divided between material retained and that passing.

The minus 4-in. stone is conveyed to a transfer point, where it is further divided by a 2-in. opening screen. The 2-in. by 4-in. material is then conveyed to crushing plant No. 1, where roadstone is processed. Equipment in this plant includes a 20-in. Allis-Chalmers Superior McCully gyratory, a 636 Hydrocone, a



Draw from each kiln is received in a 4-ton hopper as shown

Left: An interior view in one of the shafts, looking up toward the exhaust beam.

Right: Each kiln is equipped with a conical diffuser that distributes primary air.

6-in. Superior-McCully fine reduction crusher, and four screens.

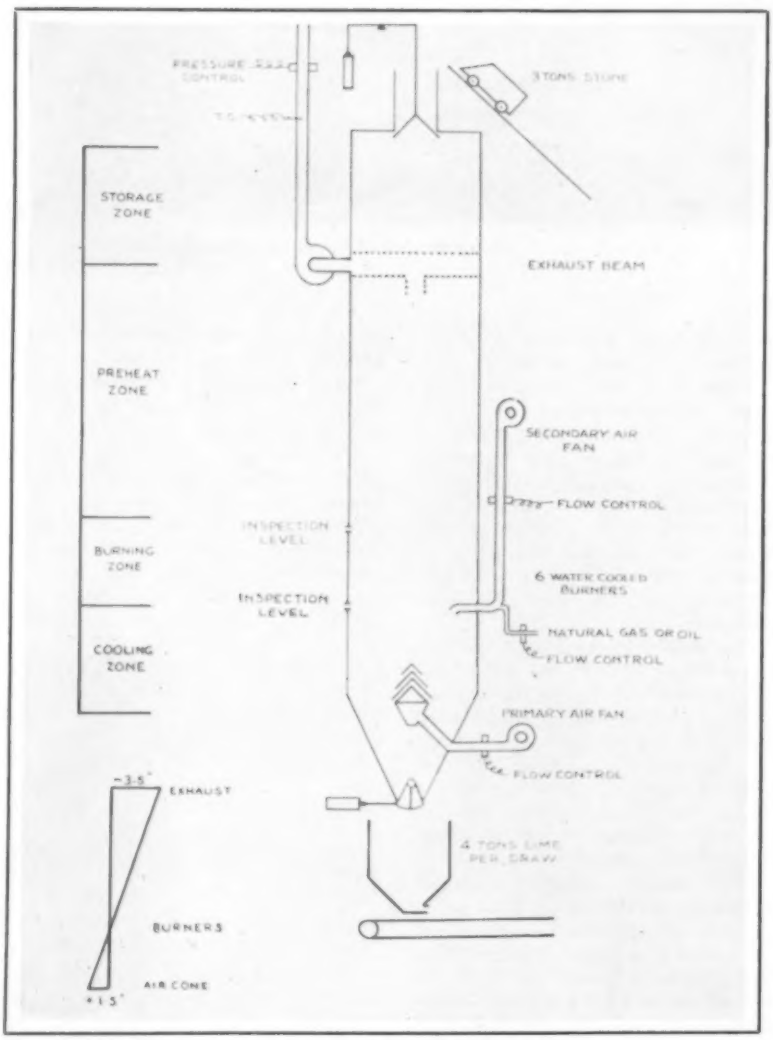
Minus 2-in. stone is transported *via* belt conveyor from the transfer point to crushing plant No. 2. In the latter operation, a 16-in. Allis-Chalmers Superior-McCully gyratory, 636 and 236 Hydrocones, a pair of 16-in. by 42-in. double roll crushers, an air separator, and screening units are used in processing chips, stone sand, and other limestone fines.

Thus, stone below 4-in., the minimum size for feed to the shaft kilns, does not become waste, but is made into a wide range of products.

The plus 4-in. kiln feed stone retained on the first separating screen, above, is transported on a 30-in., 297-ft. centers belt conveyor to the top of the concrete double kiln feed bunker. Since each of the two compartments has a capacity of 700 tons, feed to the respective kilns can be maintained for three days in the event of equipment breakdown ahead of the bunkers.

Due to the fact that a large reserve of kiln stone is maintained by trucking from a chute below the 4-in. screen to the stockpile, with subsequent recovery by means of a reclaiming tunnel conveyor that discharges onto the bunker feed belt, the bunkers can be supplied for a period of about 60 days without recourse to quarry and primary crusher operations.

The two Priest kilns, each designed for a daily nominal capacity of 100 tons, were built as twin 128-ft. high units, equipped to burn either natural gas or light fuel oil. The steel



A schematic diagram of the large shaft kilns.

shells are tapered from a thickness of ⅜ in. at the top to ¾ in. at the bottom. Thickness of the refractory brick lining also varies from 9 in. in the storage zone, where Harbison-Walker Duro is used because of its resistance to abrasion, to 18 in. in the burning zone. Super-Duty clay refractories are used in the latter section.

In addition, both shells have a layer of 1½-in. thick fiber glass insulation between the brick work and the steel. Diameter of the perfectly round inner kiln section is approximately 14 ft., which represents a cross-sectional area of about 160 sq. ft.

Each kiln is fitted with six burners into which either diffusion nozzles for natural gas or pressure atomization units for oil may be inserted. Mounting plate and harness for both types are identical in size and shape, which facilitates a quick changeover in fuel.

Each burner is cooled by a water jacket having a constant supply of fresh water. The entire assembly has a diameter of about 16 in. and, fully cantilevered from the steel shell, projects into the kiln a sufficient distance to accomplish even distribution of the fuel.

The natural gas fuel with which the two kilns are normally fired is reduced in pressure from 60 to 15 p.s.i. prior to passage through the flowmeters, and further reduction through the main gas control valves provides a usual pressure at the burner tips of about 1½ p.s.i.

Due to the fact that the Galloway plant has its own power plant with dual-fuel Fairbanks-Morse diesel generating equipment, it was considered expedient to utilize the same light oil in the main storage to accommodate the kilns with this fuel as a standby. Additional oil storage facilities were installed adjacent to the kilns, along with two complete pumping systems so cross-connected that either system can supply one or the other kiln singly, or both at once.

While the kilns were initially operated with recirculating CO_2 systems, successful experiments with other methods of combustion led to the removal of these systems, and the fans formerly so employed are now used to introduce secondary combustion air. With positive air pressure supplied below the burning zones by means of the primary air fans discharging through a conical diffuser—designed both to cool the lime and provide even air distribution—and a partial vacuum created above the burning zone by the exhaust fan (which draws through a beam at a point near the top of each kiln), the kilns operate with a zero pressure in the calcining zones.

A constant speed is maintained on the exhaust fan through throttling on the discharge side by a damper that is automatically controlled by an instrument sensing pressure at the burner level.

The kiln control instruments are all Brown or Minneapolis-Honeywell, and the complete set for each kiln contains the following: a kiln pressure indicator and control (for the exhaust damper); an indicating, recording, and integrating flowmeter (gas flow); an oil flowmeter; indicating flowmeters for both primary and secondary air; and an exhaust gas temperature indicator.

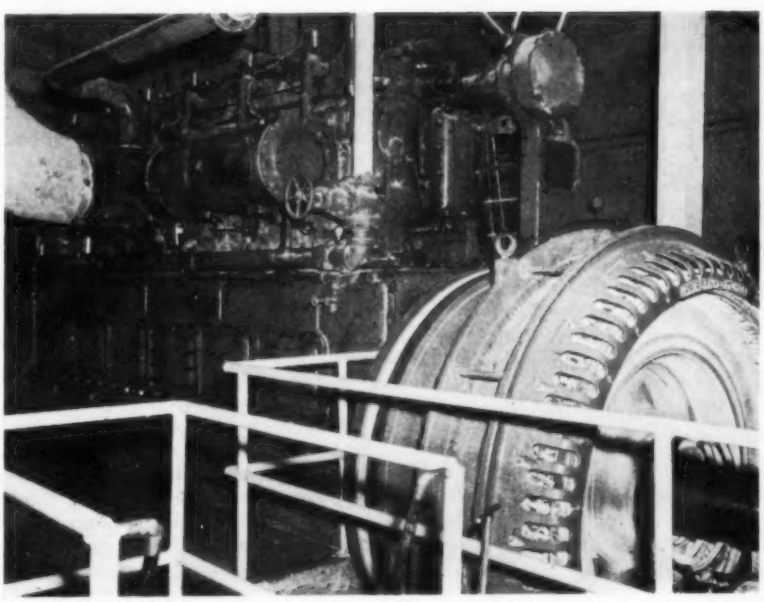
For operator convenience, all of the above instruments with the exception of the temperature and fuel flow, are repeated on the burner level of the kilns. In addition, portable thermocouples and temperature recording instruments are provided for checking during the regular periodic checks by the operator on each chift.

Charging of the two kilns is carried out only twice daily, since the storage zones of the kilns contain ample material for the remaining time. The flow of stone to the kilns is initiated on plate feeders below the bunkers. Each feeder discharge is passed over a Stephens-Adamson vibrating screen to remove any undersize material before the feed is chuted to the respective skip.

(Continued on page 104)

Right: A complete set of recording and controlling instruments is provided for each calciner.

Below: The oil used in this dual-fuel diesel-electric generator can also be used to fire the new shaft kilns.



important information on

Basic Insurance for Silica Sand Firms

also applies to other industries

By **FRANK C. WACHTER***
Secretary, Pennsylvania Glass Sand Corp.
Hancock, W. Va.

IN THIS country, where economic affairs are conducted through competitive enterprise and not monopolistic state operations, risk is the essence of business. A business enterprise consists basically of property employed by a person or persons for the purpose of attracting more property without loss of the original or augmented stake.

The enterprise from its inception will constantly face the possibility of perils that cause loss, and the uncertainty in respect to such occurrences is called risk. There are many kinds of risks. Some will be recognized at once as beyond the protection afforded by the principles of insurance, such as pricing and marketing, competitive pressures, operating breakdowns, technological changes, inflation, and national economic depressions. Some kinds, however, can be dealt with by the use of such principles, and with these we are concerned.

The risks of an average silica sand enterprise that are approachable through the concepts of insurance involve, first, the various forms of property which are subject to peril and, second, the various kinds of perils to which such forms of property are exposed. For convenience it is usual to group the forms of property as follows:

1. Specific property both tangible and intangible such as buildings, machinery, valuable papers, and money;

2. All property, that is, total resources of the company that are answerable for its legal obligations;

The kinds of perils to which property is exposed may be classified under two heads:

1. Those arising from acts of nature, such as fire, flood, earthquake, and windstorm;

2. Those arising from acts of persons, such as theft, embezzlement, vandalism, and negligence.

The extent and manner in which the application of insurance principles can fortify the company can be ascertained through an analysis of its forms of property and of the risks to which they are exposed, followed, in the case of each, by a choice among three alternatives: (1) assumption of the risk, or noninsurance; (2) self-insurance; and (3) commercial insurance. Non insurance represents the intention to bear the loss out of income or, if needed, capital resources.

Self-insurance sets up within the company a program to handle the risk, that is, setting aside cash reserves on an actuarial basis, not a mere reserve or allocation on the financial statement. Sometimes noninsurance and self-insurance are confused. Self-insurance requires, in effect, the creation of a department to be operated substantially like an insurance company. As might be expected, only large enterprises find self-insurance feasable.

The third alternative, commercial insurance, transfers the risk, for a price, to an insurance company, which combines the risk with a large enough group of similar exposures, so that the loss becomes predictable, within a small range of error, and is shared by all through the premiums paid. Thus a certain but relatively small financial burden is assumed in exchange for an uncertainty carrying the risk of a relatively large loss.

Two observations may be made at this point. The probability of a loss may be reduced, as by a prevention program, but as long as the *possibility* of loss remains, the risk remains. Conversely, if the loss is certain to happen, there is no risk. Commercial insurance of such perils is usually uneconomical, since it amounts to trading dollars with the company, and the premiums are necessarily high.

With this introduction to establish perspective, let us consider the risks of a silica sand company and the commercial insurance available to minimize them. Specific forms of property will first be considered, then total resources, and finally a word about protection of income.

Specific Forms of Property

1. Land and its mineral content. These cannot be made the subject of commercial insurance, although conceivably some loss could be suffered through earthquake.

2. Buildings and their contents. Fire is the principal peril that is insured, and it is now usual, by what is called an "Extended Coverage" endorsement to the policy, to insure also against loss from windstorm, hail, explosion, riot, riot attending a strike, civil commotion, falling aircraft, vehicles, and smoke. Land values and building foundations are excluded, as the accounts, bills, currency, deeds, evidence of debt, money, securities, and manuscripts. Recovery in a loss is replacement cost less depreciation. The premium rate may be diminished by insuring less than 100 percent of value, such 90 percent or 80 percent, but if the total value is understated when the insurance is obtained, the insured will bear the proportionate part of any loss that occurs. The premium rate is, of course, a percentage of the value insured. Protection against vandalism and malicious mischief may also be obtained by endorsement at small additional cost.

The coverage obtained may be "specific," that is, each building and contents separately insured at its own rate, for a specific amount, or "blanket," that is, all buildings and contents insured as a plant at an averaged rate. Generally the latter can be obtained more reasonably. The "specific" policy is not subject to reduction of recovery for undervaluation, but the rate is higher.

* Presented at semi-annual meeting, National Industrial Sand Association, White Sulphur Springs, W. Va., October 19, 1956.

Rates are susceptible to reduction through the use of fire-resistant materials and fire-extinguishing devices, installed under the guidance of insurance company engineers. The effort frequently pays off.

3. Boilers and pressure vessels, including air compressors. Experience has shown the principal perils here to be explosion, collapse, and cracking. Damage from such is insurable in a standard policy, and the extended form of policy covers (1) damage to any property of the insured, (2) cost of temporary repairs, (3) public liability for damage to the property or injury to the persons of others. The dollar amount of coverage should be high enough for the breadth of cover; it applies as a top limit per accident. The perils covered by this policy are excluded from the fire policy. The expert periodic inspection service supplied by the insurer is practically worth the premium paid for the insurance.

4. Power Shovels. These are exposed to quarry slides and various natural occurences, as well as to damaging acts of persons, including times of transit on public highways and common carrier. The policy obtainable, termed a "scheduled property floater," is for practical purposes an all-risk policy covering specified shovels for actual value up to stated maximum amounts. The risks insured are specified but include all that are of substantial concern. Some of them are: fire and lightning, windstorm, explosion (unless originating within steam boilers), flood, landslide, theft, pilferage, malicious damage, upset, and collapse of bridges, or sinking of ferry boats. The premium is a percentage of value, usually low.

5. Motor Vehicles. This category, for insurance purposes, includes passenger cars, trucks, tractors, bulldozers and portable air compressors. Insurance covers actual value up to a stated maximum and the premium is a percentage of it. The risks insured may be specific, such as fire, theft, and windstorm; or they may be comprehensive, including collision with another object, or upset, even though the owner's fault; or the coverage may be comprehensive except collision. Since collision coverage is relatively expensive, most owners carry comprehensive except collision and assume the risk of damage caused by their own fault.

6. Valuable papers. There are many valuable papers which, if destroyed, would require expensive man-hours to duplicate or replace, such as engineering drawings, account books, corporate documents, real estate title certificates, contracts, deeds, and promisory notes. Most if not all of these are excluded from fire and extended coverage. A standard "valuable papers" policy can be obtained, at reasonable cost, indemnifying against loss, destruction, or damage from any cause, with minor exceptions. Protection against fire and water damage is incomplete without this policy.

7. Money and checks. Some states require payment of wages in cash, and a two weeks' payroll can be a substantial sum. This and other money, as well as checks, can be insured at reasonable rates against robbery or theft both on and off the premises. Usually two policies are required, one of which protects against acts of persons other than employees and the other against dishonest acts of employees, such as embezzlement and theft. The latter policy also covers employees' theft of any other property, for instance hand tools, spare materials, and other things that can easily be carried away.

8. Bank account. The most common way in which losses are sustained in bank accounts is by check alteration. Protection against loss in this manner can be assured by the purchase and use of a check writing machine, which is accompanied at no extra charge by a policy indemnifying against loss by the alteration of such checks. Loss from forged endorsements is primarily the responsibility of the bank.

Protection of All Property

All of the property and assets, that is, the total resources of an enterprise, can be reached and sold through legal process for the satisfaction of financial obligations. Some of the forms of such obligations are found in the legal liability of the enterprise for its acts or ommissions in relation to the general public, to the employees of the enterprise, and to the customers of the enterprise. These will be treated individually in relation to the insurance available.

1. (A) Liability to the general public except by use of motor vehicle. In the operation of a silica plant varying duties of care are owed to the public, in order to avoid injury to persons and damage to property. The public includes persons on and off the premises, business and casual visitors, and in some instances even trespassers. Injury or damage can be caused through blasting operations, unguarded machinery, and other dangers some of which seem farfetched. Indemnity may be obtained against such liability by the purchase of what is known as a comprehensive general liability policy at a rate that is generally reasonable. This coverage does not include liability for damage to railroad cars while they are in the custody of the insured, in the absence of such an endorsement. However, the latter can be readily obtained.

The greatest part of the premium cost lies in the basic limits of coverage, and conslderably higher limits may be obtained at insignificant cost. Limits as high as $100,000 per person and $300,000 per accident are not considered high these days, nor are they particularly expensive. Such a policy customarily insures directors and officers of a corporate insured, as well as the corporation itself. The premium is a percentage of payroll and so constitutes a built-in addition to the cost of wage increases.

1. (B) Liability to general public by use of motor vehicle. This type of liability is well known to all of us and involves both personal injury and property damage. Like the policy last mentioned, higher limits may be purchased at insignificant cost. Consequently, limits of $100,000 and $300,000 and even higher are exceedingly common. Premiums are determined by loss experience and periodically are adjusted to it.

2. Liability to employees. By statute, employers are liable for compensation to employees for personal injury and death caused by accident or occupational disease arising out of and in the course of their employment. As some of such statues are drafted, there are also instances of a residue of common law liability remaining with the employer. Compensation is payable regardless of the employer's neligence or lack of it, and common law liability arises only from the employer's negligence. Both statutory and common law liability are covered by the standard so-called workman's compensation insurance policy. The former is covered to the full amounts of compensation specified by the statute and the latter to the maximum of $25,000. The maximum for common law liability may be increased by endorsement for an extra premium, which is usually reasonable.

(Continued on page 99)

National Sand and Gravel Association Announces Safety Contest Results

RESULTS of the second annual safety contest, conducted by the National Sand and Gravel Association during the period from July 1, 1955, to June 3, 1956, have been prepared for publication. Prior to 1955 the contest was conducted by the U. S. Bureau of Mines.

The winning plant in the Class A competition (plants producing more than 500,000 tons of sand and gravel during the contest period) is the Van Sciver plant of the Warner Company, Philadelphia, Pa., which operated without a single injury during the contest period. Twenty plants entered in the Class A competition had accident-free records. (Following the policy established by the N.S.G.A. Safety Committee, the plant with the greatest combined total of tons of sand and gravel produced and man-hours worked receives the highest rating in the case of identical scores.) Certificates of Achievement in Safety will be awarded to the following Class A plants.

Harry T. Campbell Sons' Corp., Towson, Md., White Marsh plant.

Consolidated Rock Products Co., Los Angeles, Calif., Irwindale Plant No. 6 and Sun Valley Plant No. 2.

Consumers Company, Chicago, Ill., Algonquin plant.

J. K. Davison & Bro., Pittsburgh, Pa., Dredge *Allegheny*.

Dravo Corporation, Pittsburgh, Pa., Keystone Division.

Flint Sand & Gravel Co., New Orleans, La., Bluff Creek plant.

Fort Worth Sand & Gravel Co., Fort Worth, Texas, Quigley plant.

Grand Rapids Gravel Co., Grand Rapids, Mich., Grand Rapids plant.

McGrath Sand & Gravel Co., Inc., Lincoln, Ill., Forreston plant.

Material Service Corp., Chicago, Ill., Cayuga plant, Lockport and Morris plants.

Pacific Coast Aggregates, Inc., San Francisco, Calif., Brisbane plant (No. 130), Centerville plant (No. 106), Fair Oaks plant (No. 111), and Kerlinger plant (No. 114).

J. L. Shiely Co., Saint Paul, Minn., Grey Cloud plant.

Western Sand & Gravel Co., Lincoln, Nebr., South Bend & Cedar Creek plant.

Of the plants entered in the Class B competition (plants producing between 200,000 and 500,000 tons of sand and gravel during the contest period) 33 had accident-free records. Plants Number 5 and 6 of the Lyman-Richey Sand and Gravel Corp., Omaha, Nebr., will be awarded the Class B trophy. Certificates of Achievement in Safety will be awarded to the following plants:

Alabama Gravel Co., Elmore, Ala., Elmore plant.

Basic Construction Materials, Div. of New York Coal Co., Chillicothe, Ohio, basic construction materials plant.

Becker County Sand & Gravel Co., Cheraw, S. C., Marion plant.

Belton Sand & Gravel Co., Inc., Belton, Tex., Belton plant.

Consolidated Stone & Sand Co., Montclair Heights, N. J., Riverdale plant.

Consolidated Rock Products Co., Los Angeles, Calif., Claremont plant (No. 11), Hewitt plant (No. 3), Sierra plant (No. 19), and Yorba Linda plant (No. 15).

Consumers Company, Chicago, Ill., Lacon plant.

Dallas Sand & Gravel Co., Inc., Selma, Ala., Selma plant.

L. G. Everist, Inc., Sioux Falls, S. D., Hawarden, Iowa, plant.

Gifford-Hill & Co., Inc., Dallas, Tex., Bobwyn and Hudson plants.

Graham Brothers, Inc., El Monte, Calif., San Juan Capistrano plant.

Greenville Gravel Co., Greenville, Miss., Greenville plant.

Hause Gravel Co., Asbury Park, N. J., Allenwood plant.

Edw. Lutz Sand & Gravel Co., Milwaukee, Wis., Sussex-Merton plant.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr., Plants No. 2, 7, 9, 10, and 11.

McGrath Sand & Gravel Co., Inc., Lincoln, Ill., Bloomington plant.

Marquette Cement Manufacturing Co., Chicago, Ill., Memphis plant.

Memphis Stone & Gravel Co., Memphis, Tenn., Camden plant.

Pacific Coast Aggregates, Inc., San Francisco, Calif., Clayton plant (No. 135), Olympia plant (No. 125), and Rockfield plant (No. 124).

The Rubber City Sand & Gravel Co., Akron, Ohio, Knight plant.

J. L. Shiely Co., Saint Paul, Minn., Greene-Grano plant.

Union Sand & Gravel Co., Spokane, Wash., Yardley plant.

Western Indiana Gravel Co., Lafayette, Ind., Leesburg and Montezuma plants.

Of the plants entered in the Class C competition (plants producing less than 200,000 tons of sand and gravel during the contest period), 45 had accident-free records. The Fort Jefferson Plant of American Aggregates Corp., Greenville, Ohio, will be awarded the Class C trophy because it had the largest combined total of tons of sand and gravel produced and man-hours worked among these 45 plants. Certificates of Achievement will go to the following plants.

Arrow Sand & Gravel Co., Columbus, Ohio, Grandview plant.

Brewer & Brewer Sons, Inc., Chillicothe, Ohio, Chillicothe plant.

Brooks Sand & Gravel Co., Kingsport, Tenn., Erwin plant.

The Buffalo Slag Co., Inc., Buffalo, N. Y., Alfred Station plant (A.S.) and Franklinville plnat (F).

Cemstone Products Co., St. Paul, Minn., Lakeland and Westcott plants.

Columbia Sand & Gravel Corp., White Plains, N. Y., Martindale plant.

Concrete Materials Co., Waterloo, Iowa, Eddyville and Waterloo plants.

Concrete Materials & Construction Co., Cedar Rapids, Iowa, Cedar Rapids plant and Marshalltown plant.

Eastern Rock Products, Inc., Utica, N. Y., Barneveld plant (No. 2) and Boonville plant (No. 1).

Hampshire Sand & Gravel Co., Westhampton, Mass., Westhampton plant.

Highspire Sand & Gravel Co., Harrisburg, Pa., Harrisburg plant.

Kern Rock Co., Bakersfield, Calif., Union Paving & Cottonwood Creek plants.

Lorain Elyria Sand Co., Lorain, Ohio, Lorain plant.

Lyman-Richey Sand & Gravel Corp., Omaha, Nebr., Plants No. 23 and No. 15.

Mapco Sand & Gravel Co., Minneapolis, Minn., Minneapolis plant.

Memphis Stone & Gravel Co., Memphis, Tenn., Eaton pit and Raleigh plant.

Mobley Construction Co., Inc., Morrilton, Ark., Dardanelle plant.

Mount Vernon Sand & Gravel Co., Inc., Mount Vernon, Wash., Samish and Oak Harbor plants.

Muskogee Materials Co., Muskogee, Okla., Muskogee plant.

Nathan Oaks & Sons, Oaks Corners, N. Y., Oaks Corners plant.

Pacific Coast Aggregates, Inc., San Francisco, Calif., Prattco plant (No. 109), Lapis plant (No. 110), and Yolo plant (No. 131).

The Prince George Sand & Gravel Co., Laurel, Md., Laurel plant.

Ray Industries, Inc., Oxford, Mich., Rochester plant.

River Rock Co., Oildale, Calif., Kern River plant.

Riverside Gravel, Bismarck, N. D., Schmidt plant.

C. W. Shirey Co., Waterloo, Iowa, Waterloo plant.

South Bend Sand & Gravel Corp., South Bend, Ind., South Bend plant.

Standard Industries, Inc., Tulsa, Okla., Tulsa plant.

Texas Construction Material Co., Houston, Tex., Alleyton plant (No. 24) and Corrigan plant.

Waverly Gravel & Tile Co., Shell Rock, Iowa, Shell Rock plant.

Wesco Materials Corp., Dallas, Tex., Circle plant (No. 2), South Pit, and Star plant.

Western Indiana Gravel Co., Lafayette, Ind., Anderson plant.

The *Rock Products* trophies will be presented to the three winning plants at the Los Angeles convention next February. Certificates of Achievement will be mailed to accident-free plants which did not win a trophy. All production and distribution employees of the three trophy-winning plants will be awarded Cer-

(*Continued on page* 99)

Basic Insurance

(*From page 97*)

Under this policy if the insured is a corporation, as is usually the case these days, the protection is extended only to the corporation and not, as in the case of the public liability policy, to the directors and officers of the corporation. Consequently, an individual who does business in the corporate form to avoid personal liability finds himself personally exposed to this particular risk *because* he has chosen the corporate form. I know of no coverage presently available to such individuals. The premium is a percentage of annual payroll, and wage increases inflate it.

3. Liability to customers through product. The products of some business enterprises are of such character that personal injury or property damage can be caused by accidents occurring in their use. If such injury or damage occurs, the seller of the product can successfully be held liable for damages if neglect of some duty on his part can be shown. The explosion of a glass soft drink bottle would be a simple example. Is there a risk of such liability in the sale of silica sand? The risk of liability for personal injury in the use of this product would appear to be so remote as not to be considered a possibility that warrants insurance.

The risk of liability for property damage is considerably more possible. For instance, contaminated silica may through accident reach and be used by a customer and thereupon cause the spoiling of the product in or upon which the customer uses it. Successful assertion of a sizable damage claim is easily conceivable in some such circumstances. Liability to such claims can be covered by this so-called products liability insurance. However, as a general rule, insuring companies require the purchase of personal injury coverage whether it is desired or not, as well as the property damage coverage; and it may also be observed that standard maximum limits are neither adequate nor cheap and higher limits are relatively expensive. It is worth noting that insurance officials differ as to whether this type of risk is of the insurable kind or whether it is one of the many business risks that insurance companies should not be called upon to underwrite. However, coverage is available; and each person can decide this question for himself.

Protection of Income

The purpose of all forms of property insurance heretofore discussed is to acquire the money by which to replace or repair the property lost or damaged. Repair or replacement may take some time, during which there is interruption of income while overhead continues, so that property damage insurance does not make good the entire loss. This peril may be covered by what is generally known today as business interruption insurance. It can be purchased in connection with fire and extended coverage and will cover items generally included in continuing overhead expense, such as salaries, and light, heat, and power charges. Similar insurance can be purchased in connection with a boiler explosion policy.

Conclusion

Many details and complexities could be discussed in regard to all of the risks and coverages that have been mentioned, but the purpose here is only to furnish an outline of coverages that should not be omitted. A few additional observations may be of value.

1. Every insurance policy, even if called comprehensive, excludes some risks. Those should be as well known and understood to the purchaser as the risks that are included.

2. The settlement policies of an insurance company are more important than its rates. The ease or difficulty with which a fair settlement can be obtained by the insured on behalf of himself in a fire claim, for instance, is of substantial importance to him; but the fairness of his insurance company in its treatment of his employee and its treatment of a fellow citizen of a community are also important to the insured in his labor relations and in his public relations. Insurance companies should be specially considered and chosen with such things in mind.

3. Insurance against floods is not generally available. However, the United States Congress has recently passed legislation to make such insurance available through federal participation. Arrangements to this end are presently being formulated, and the insurance is expected to become available in the near future.

4. War damage insurance has not been available since 1946. It is excepted from all policies.

5. If insurance against loss is important, prevention of loss is equally important, since all loss frequently is not reached by insurance. For example, fire and business interruption coverage protect capital investment and income, but there is no insurance covering the permanent loss of a customer through an extended shut-down. Moreover, rates reflect loss experience, and in the long run a sound accident prevention program will be paid for by the premium savings that follow. In short, one could not overemphasize the importance of this fact: insurance is not a substitute for prevention.

N.S.G.A. Safety Contest

(*From page 98*)

tificates of Accomplishment in Safety.

A total of 222 plants were enrolled by 126 member companies, the greatest participation in the history of the contest. (The 1954-1955 contest, which established the previous all-time high for participation, included participation of 200 plants of 125 member companies.) The 1956 contest surpassed all previous highs with a record of 15,421,223 man-hours worked by employees of the competing plants and 110,561,947 tons of sand and gravel produced during the contest period.

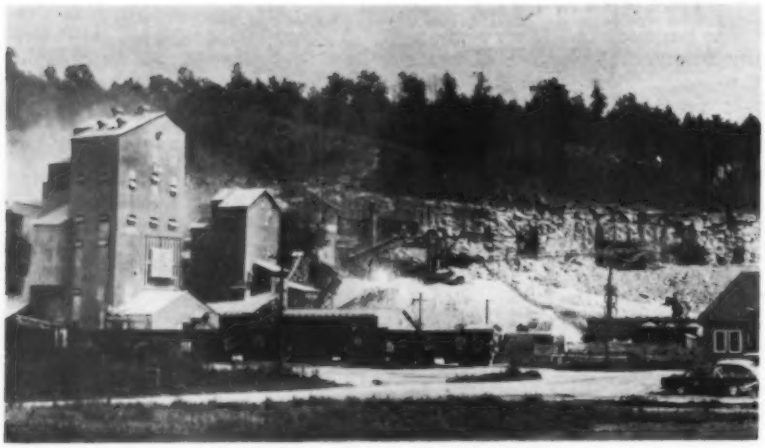
Dept. of Commerce Issues Natl. Trade Assn. Directory

The *Directory of National Trade Associations,* containing more than 2,000 national trade associations and related organizations of businessmen, has been published by the Trade Association Division of the Office of Technical Services, U. S. Department of Commerce.

Compiled by Jay Judkins, chief, Trade Association Division, the directory gives the mailing address and the name and title of the key executive in each organization. An index facilitates the location of associations in particular product or service fields.

This directory may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 40 cents per copy.

Presentation dinners held recently by the Penn-Dixie Cement Corporation honored a total of 431 long-service employees, each of whom has spent at least 25 years in the service of the company. All of these men and women received watches in token of the company's appreciation for their service. The presentations were made at a series of eight dinner meetings held at various locations.



Columbia Quarry Company's operation at Valmeyer, Ill., showing the bluff and mine entrances.

Columbia Quarry Company Constructs Large Underground Storage System

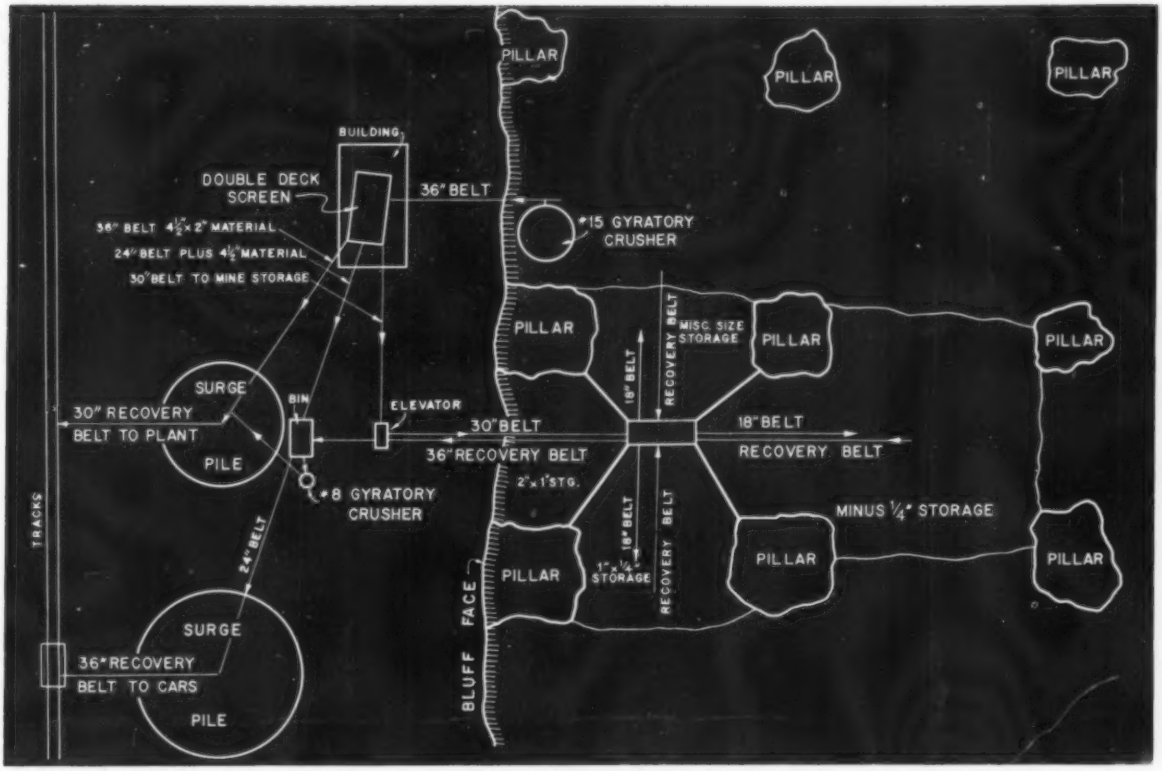
A UNIQUE and efficient underground storage system has been installed by the Columbia Quarry Company in a part of the mined-out area of its Valmeyer, Ill., limestone mine. It is probably the first time such extensive use has been made of an underground area for this purpose.

By storing finished sizes underground, a large supply of dry stone is assured at all times. Tests made within the mine indicate that the moisture content of stockpiled stone actually decreases to a low moisture level and then remains constant. The dry storage area will assure adequate supplies of suitable material at all times, thus permitting a more efficient plant operation. Adequate surge piles will effect a reduction in operating time due to a balancing of fluctuations in car supply and daily orders for various materials. Over 35,000 tons of stone can be stored in the presently completed underground storage area.

The underground storage system is installed with belts underlying each storage area to insure quick recovery from any area at all times. The 30-in. recovery belts feed to a main 36-in. belt, which in turn takes the material to cars being loaded, to the screening plant for further processing, or to other conveyors for transport to other parts of the plant.

Material of various sizes can be brought to the underground storage area by belt and sent to any desired point. Storage areas are separated by poured-concrete-and-steel partitions to prevent contamination and mixing of various sizes of products. As indicated in the simplified flow diagram, material is brought by 20-ton side-dump trucks to a No. 15 gyratory crusher for primary crushing. The crushed limestone is sent to a double-deck screen having a 4½-in. screen on the top deck and a 2-in. screen on the bottom deck. The minus 2-in. material from this screen can be sent to the underground mine storage *via* a 30-in. belt. From this belt the material is elevated to another 30-in. belt, which conveys it to a centralized point overlying the underground storage area. Later it is fed to a 14- by 6-ft. double-deck screen presently equipped with 1- and ¼-in. screens. Screened products are dispersed to the various

This mine view shows the primary crusher at the right. At the left are the conveyor to the vibrating screen, and a stockpiling conveyor to one of the storage compartments.



The flow diagram of the plant, which also shows the floor plan of the underground area.

storage areas *via* additional conveyors.

Reinforced concrete tunnels containing 30-in. belt conveyors underlie all the underground storage area. These tunnels have openings at regular intervals for installation of Syntron feeders, so that material may be recovered from any point in the storage area. Recovery from stockpiles can be made at rate of 500 t.p.h.

A unique electrical control system allows virtual automatic control of the belts, feeders, and screens involved in carrying material to and from the storage area. Automatic controls will stop the flow of material to any point where there has been a choke-up or other disturbance. Nearby identical control panels for recovering material from underground storage are located in the screening plant, as well as in the Raymond mill building. To prevent mixing of products or any other confusion, only one of these control panels can be operated at a time. By means of the control panels, complete recovery of material from any point in the underground storage area is possible at a rapid rate.

When current construction is completed, the underground storage area and a washing and carloading station will permit dismantling of the present wooden structure which now houses these operations. It will mean a complete fireproof, stormproof area for processing limestone efficiently in all seasons of the year.

Future plans under consideration include the installation of additional grinding equipment underground to make a finer-sized product which will be sent through a rotary drier and then screened to desired sizes. All these facilities and stockpiles would be located underground.

Harbison-Walker Projects Revealed for Midwest, East

Plans for the construction of a new 150,000-sq. ft. manufacturing plant in Hammond, Ind., for the Harbison-Walker Refractories Company of Pittsburgh was announced by Earl A. Garber, president. The plant is scheduled to go into operation early in 1957.

Two other projects were also mentioned by Mr. Garber. A 22,000-sq. ft. addition to Harbison-Walker's Baltimore, Md., plant consists of two standardized steel structures for storing refractories.

Recently completed, the silica refractories plant in Leslie, Md., has been expanded to include a 7,200-sq. ft. steel structure.

These additions are part of a $55,000,000 expansion program, initiated by Harbison-Walker in 1951.

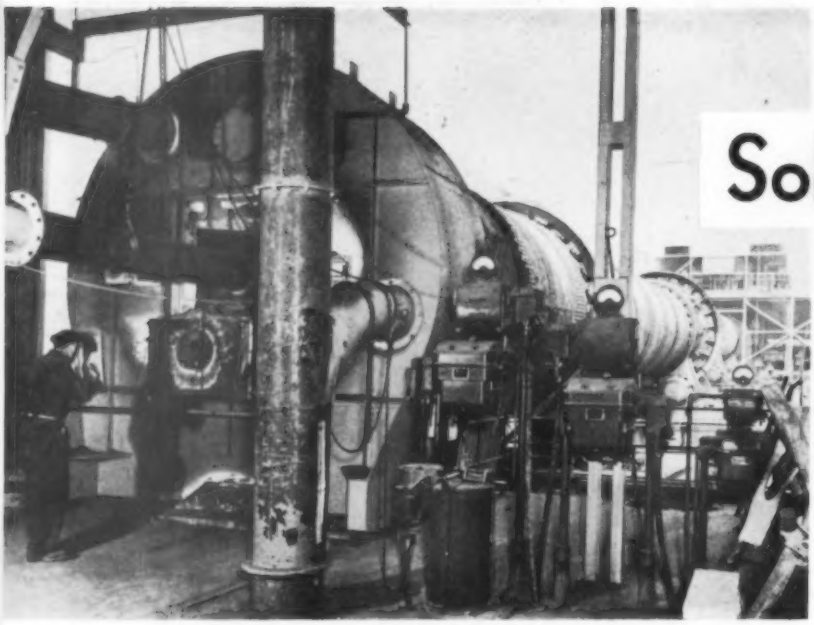
Report of S.D. Shale Issued By Natural Resources Comm.

The Natural Resources Commission of South Dakota has just released a report entitled *Characteristics of Certain South Dakota Shales Under Expansion to Produce Lightweight Aggregate.*

Representing the culmination of a two-year research program undertaken by the Engineering and Mining Experiment Station at the South Dakota School of Mines, the report covers all shale members outcropping in the state which might produce a lightweight aggregate through treatment on a scale compatible with commercial operations.

Copies of the report may be obtained from the South Dakota Natural Resources Commission, Pierre, S. D.

One of the newest and largest crushing operations in the Pacific Northwest is that of the Houck & Sons' plant near Pendleton, Oreg.



Solway's New

One of the two rotary kilns at Whitehaven, measuring 230 ft. in length and 11 ft. 2 in. in diameter. The kilns are lined to withstand temperatures up to 1,600 deg. F.

By JOHN GRINDROD, B.A. (Com.)

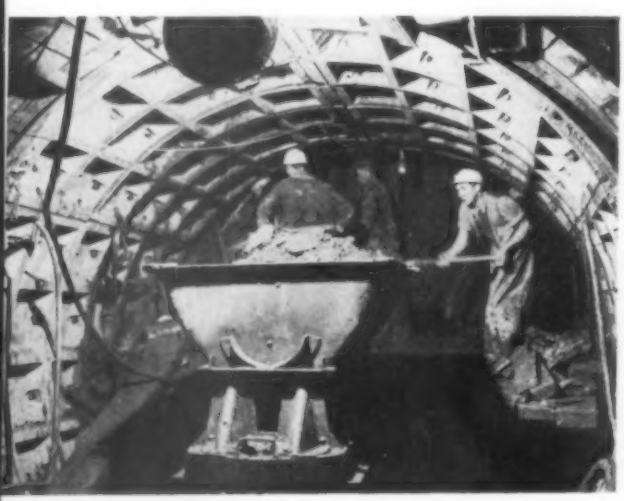
Another P&Q Exclusive

REPRESENTING one aspect of the £25,000,000 investment program sponsored after the 1951 crisis by the British Government for the production of sulphuric acid from indigenous raw materials, a large-scale anhydrite mining project and a cement and sulphuric acid manufacturing process are now being successfully operated by Solway Chemical Limited on the Cumberland coast near Whitehaven, England.

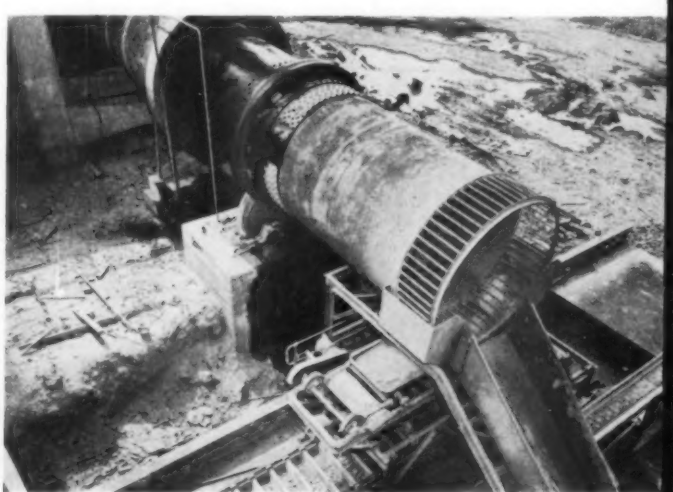
One of the outstanding features of the recently completed project is the fact that the plant is actually built on extensive anhydrite deposits. The capacity of the acid and cement plants and the planned output of the mine were increased while the facility was still under construction. About one-half of the anhydrite and the acid is sold on the open market, while the other half is used by Marchon Products Limited, the parent company, to produce tripolyphosphate for detergents.

It was in 1939 that Marchon Products first started making surface active agents and detergents. By 1950 a small business had grown into an important chemical manufacturing organization which used large quantities of sulphuric acid. When the sulphuric acid crisis arose, the need for some convenient and permanent source of supply became more than ever obvious. One of the schemes suggested to meet the situation was the erection of a pyrites plant at Whitehaven, but the Board of Trade was unwilling to give any priority to the construction of another pyrites plant in addition to the 20 already under construction in various parts of the country as a part of the general investment plan. There remained only calcium sulphate (found as either gypsum or anhydrite) as a raw material.

The south drift under construction at the Solway anhydrite mine near Whitehaven.



The No. 1 clinker cooler, which handles approximately 140 tons per day.



Cement Plant and Anhydrite Mine

It was found that Marchon Products had built its plant above what is probably one of the largest seams of anhydrite in the country. Borings made at Whitehaven by Marchon Products confirmed the deposit. The first borehole encountered an anhydrite seam 12 ft. thick and a second 17 ft. 6 in. thick, with a thin intermediate layer of mixed shale and anhydrite between them. Other borings showed that seams thickened to at least 80 ft. under St. Bees Head. The deposits already proved will provide raw material for the manufacture of acid and cement for many generations, and it has been estimated that at the present rate of output, about 7,000 tons a week, the deposits will last for 400 years.

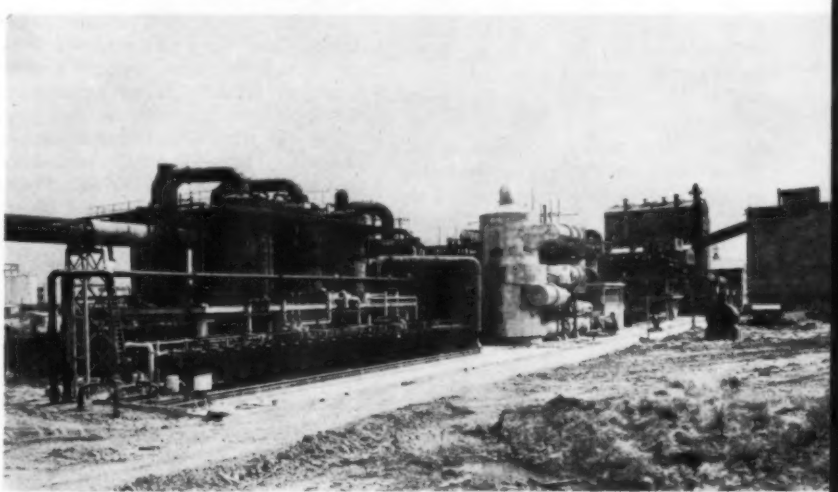
When the presence of anhydrite had been established, it was decided that the manufacture of acid and cement should be undertaken by Solway Chemicals Limited, in which Marchon Products holds the controlling interest. The Solway plant was designed to produce about 90,000 tons of acid per year, about double the normal Marchon requirements. On the advice of the Development Areas Treasury Advisory Committee, the British Treasury agreed to finance a substantial debenture issue.

Originally it was intended that the mine should produce about 175,000 tons of anhydrite a year, the cement plant about 75,000 tons a year, and the acid plant a similar tonnage. The cost of the project was then estimated at about £2,000,000. Currently, however, the mine is producing about double the quantity of anhydrite at first envisaged, and about 100,000 tons a year of cement and acid are being produced. This expansion, together with the general rise in prices, boosted the cost of the plant to about £3,000,000. Toward the end of 1955 it was announced that Albright and Wilson had agreed to buy the entire share capital of Marchon Products and Solway Chemicals and provide additional funds for expansion.

Some 300 ft. below ground the workings of the Whitehaven anhydrite mine are reached by two parallel drifts, each approximately the size of a subway tunnel, and each 1,000 yd. long with a slope of one in seven. About 70 tons of loose material is brought down by each blast. At the face this material is loaded in large pieces by electric shovels onto diesel dumpers and tipped into a hopper in the mine. It is then carried by means of conveyor belts to the screening and

(*Continued on page* 128)

Approximately 350,000 tons of anhydrite per year is produced in this plant. This view shows the crushing plant and raw material silos.



Contact plant (No. 1 stream), with the gas cleaning plant in the background.

Ash Grove Lime

(From page 95)

The latter, of 4-ton capacity, are counterbalanced and hauled up their inclines at the rate of 75 f.p.m. by a 1¼-in. cable from a Fairfield hoist. At the top of the kiln, the skip tips its load into the hopper above a charging bell. In so doing it trips a limit switch that shuts off the hoist and simultaneously activates a controller operating the Vickers hydraulic bell mechanism. A time lapse is comprehended by the control to assure emptying of the skip before the bell-lowering cylinder is activated.

The bell is made with a tapered seat to provide close tolerance and maintain the vacuum in the upper part of the kiln when the bell is in closed position. After being lowered to allow stone to fall into the 250-ton storage zone, the bell dwells in the down position for a short period to assure complete discharge from the hopper above, and then returns to the closed position.

When the cycle is complete, the program controller re-activates the skip hoist mechanism, thus returning control of the skips to the charging operator. In the event of winch or other mechanical failure in the charging equipment, the kiln storage zone provides a safety factor.

Below the storage zone the stone begins a travel through the active kiln area that is roughly 62 ft. from the top of the preheat section to the bottom of the cooling zone. At the bottom of the kilns, the lime drawing equipment installed consists of a pair of air-operated shear gates and a constant-volume hopper. The latter allow for drawing either kiln at any desired time, or for simultaneous draw.

In normal operation lime is drawn from each unit every 55 to 65 minutes. Since it is considered desirable to have the kiln operator at the draw point during this procedure, the control for the air cylinder on the shear gates is manual. The gates are opened for a period sufficient to fill the underlying 4-ton hoppers—this amount constituting a normal draw.

A plate feeder below each hopper discharges the four tons of lime at a predetermined rate onto a 30-in. belt conveyor with 224-ft. centers. The latter transports the calcined material to an apron feeder for sorting and subsequent transfer to a pair of Sturtevant mills. The rate of discharge from the foregoing plate feeders allows for hand picking of any chert and overburned lime present before the material reaches the crushers, and also for specialized grading.

Following a reduction to minus 1½-in., the calcined stone is conveyed to processing operations, which include production of pebble quicklime, pulverized quicklime, normal hydrate, chemical hydrate, and "special" Type S hydrated lime. Throughout the processing, chemical and physical tests, supervised by the company's control laboratory, maintain a quality which meets Ash Grove standards.

The program of modernization at Galloway has derived most of its impetus from Paul Sunderland, Ash Grove's progressive chairman of the board, who for a period of 25 years had formerly supervised this operation. This plant, as well as the 9-shaft kiln plant at Springfield, is now superintended by C. E. Baxter Jr. A large part of the success achieved with the new shaft kilns at Galloway is due to the efforts of Ian Smellie, representative of H. L. Hall, who devoted considerable effort toward making operating revisions to the original English design of these calciners.

86-Year-Old Saginaw Man Wins $10,000 Contest Prize

Some people live a long life before they experience a piece of luck that might be called sensational. Alva E. Kendall of Saginaw, Mich., made his first try at winning a contest award when he was 86 years old. He entered the National Gypsum Company's contest of last spring by writing a 25-word ending for the sentence: "I would like to improve my home with Gold Bond Asbestos Siding because . . ."

Alva E. Kendall (right) receiving a check for $10,000 from a representative of the National Gypsum Company—the first prize in a $25,000 nationwide contest.

Among the 73,000 entries submitted, Mr. Kendall's sentence was considered the best, and National Gypsum officials began planning how to inform him that he had won a $10,000 prize. After consulting his physician, Mrs. Kendall told him that he had captured a top prize, and officials went to their Saginaw home to make the presentation.

Visitors from U.S. Inspect Canadian Potash Operation

Directors and officials of the Potash Company of America, Carlsbad, N.M., recently visited the firm's operation at Saskatoon, Sask., to inspect the work in progress there. Development of the Canadian project was begun early in 1955. Since that time freezing operations and installation of the main sinking hoist have been completed; the permanent headframe, 137 ft. high, has also been erected. Numerous buildings have been constructed, among them a concrete batching plant.

Labor Developments

(From page 72)

tive newcomers. They are learning the lesson that every veteran campaigner knows: namely, if you have an issue plus an organized effort back of it, you have a chance for success. One without the other rarely wins through. The unions have many issues. It is because they are learning to build supporting political organizations, as in Michigan, that their potential influence is of such great significance.

Maintenance

(From page 91)

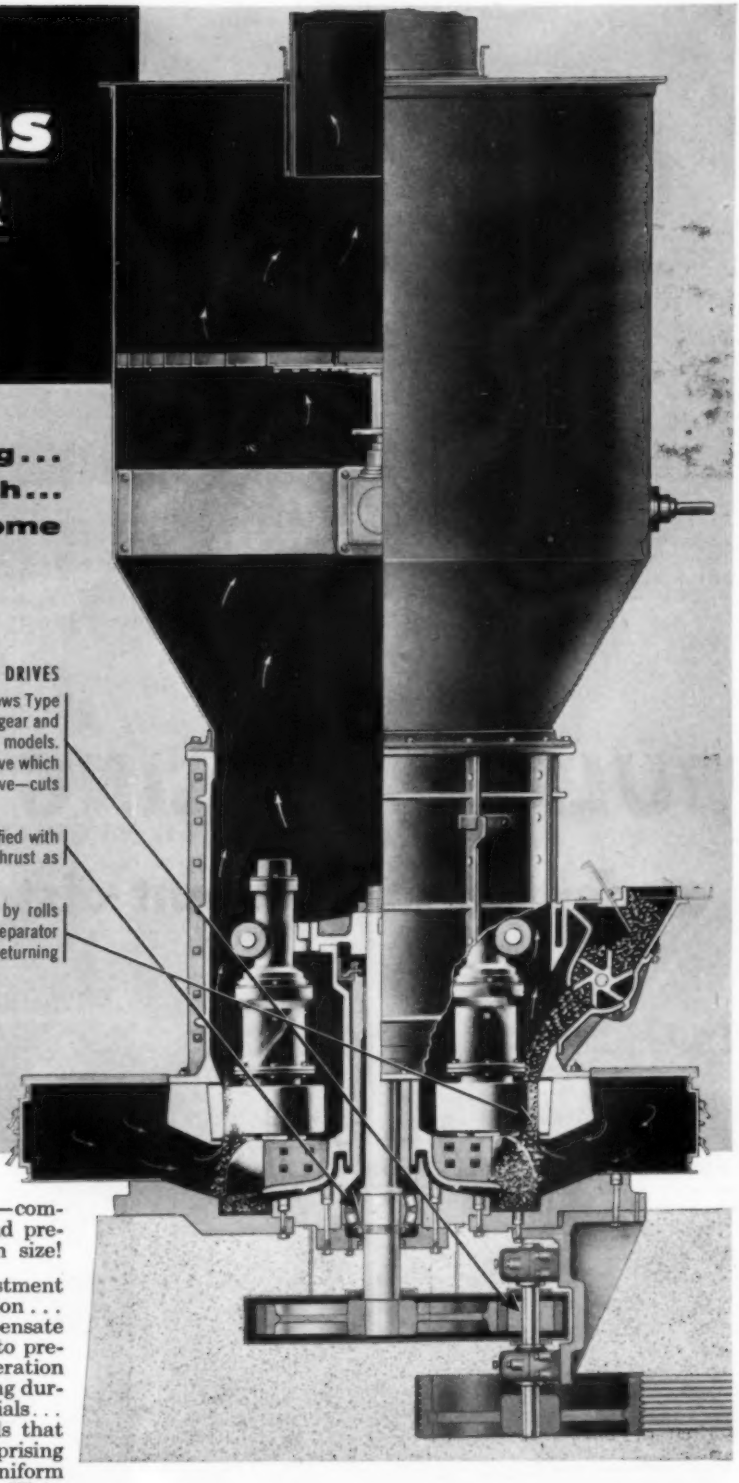
9. Any good maintenance program also allows for **periodic training** and instruction, not only of the individual or individuals in charge of maintenance in the organization, but of every man who uses any piece of equipment.

The overall job of good and low-cost maintenance is always more easily accomplished if everyone on the staff is maintenance conscious and kept that way through frequent maintenance demonstrations or discussions.

We should pay the same attention to maintenance as we give to safety; the results are just as important.

10. **Time charts** should be established for each piece of equipment. These should assure the management that each unit receives proper attention as frequently as is needed. Such charts also have a decided advantage in permitting the careful scheduling of each individual maintenance job; thus there will be no periods overloaded with maintenance work and others with almost no such work.

WILLIAMS ROLLER MILLS



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Another Williams advancement! Cutaway shows Type D Mill with Spinner Air Separator with spur gear and pinion drive used on Standard and larger models. Smaller sizes have simple gearless V-belt drive which is easier to maintain than bevel gear drive—cuts labor and downtime.

Bearing alignment of central shaft is simplified with only 2 bearings, the bottom one carrying thrust as well as radical load.

NOTE FLOW OF MATERIAL being ground by rolls rotating against bull ring, then air-swept to separator which discharges finished product while returning coarse tailings for regrinding.

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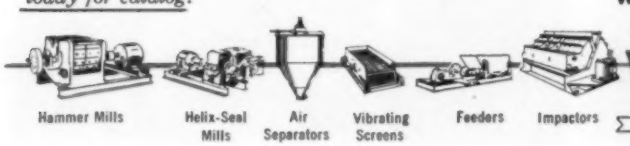

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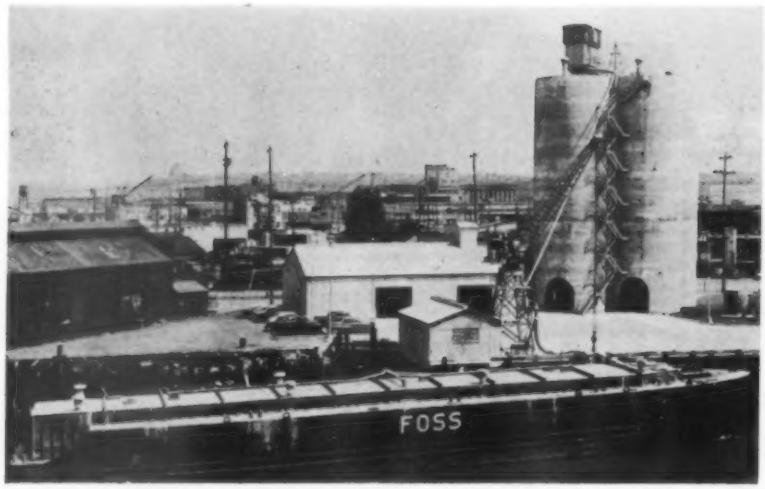


Cement distributing station located at Harbor Island, Seattle, Wash. At the right are four storage silos. In the foreground is the 6,500-bbl. bulk cement barge used to transport bulk cement from the plant of the Olympic Portland Cement Company, Bellingham, Wash. The bag storage building is at the left.

A NEW cement distributing station has recently gone into operation in the Seattle, Wash., area in order to take advantage of water transportation rates from Bellingham, Wash., 95 miles from Seattle.

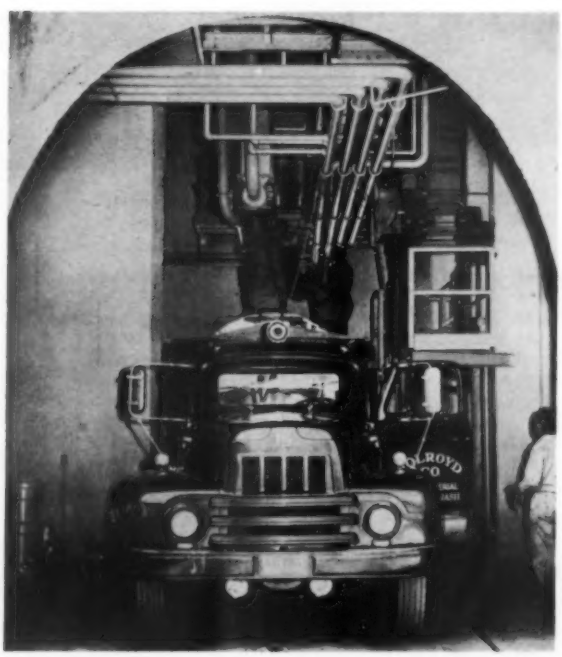
At Harbor Island, Seattle, the Olympic Portland Cement Company erected four 10,000-bbl. storage silos, truck-loading facilities, a bag storage, and a packer building. The cement is transported from the Bellingham plant to Harbor Island *via* barge, a converted L.S.M. ship 220 ft. long, with a capacity of 6,500 bbl.

Cement from the cement plant (about a mile from the waterfront) is transported in company-owned hopper-bottom cars to a loading dock. The cars are loaded from silos at the plant by means of Fuller-Huron Airslide fluidizing conveyors. At the end of the dock, the cement is discharged from the cars to a

BULK HANDLING

at new Seattle cement distribution station

Right: A bulk truck with a carrying capacity of 120 bbl. being unloaded by conveyor with a capacity rated at 1,000 bbl. per hour.

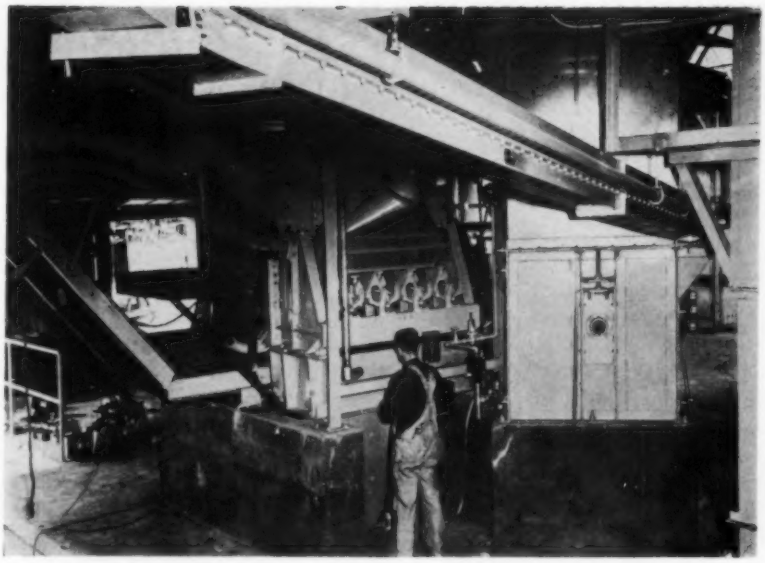


Below: In the barge hold cement is unloaded by a remote-control unloader. Actual unloading time is 18 hours, or an average of 360 bbl. per hour, including clean-up time.

Fuller-Kinyon stationary pump, which in turn conveys it to the hold of the barge.

When the barge arrives at the distributing station, it is unloaded by means of a Type D Fuller-Kinyon remote-control unloader. Engineered, designed and built by the Fuller Company, the unloading system pumps the cement from the barge up and into any one of the storage silos, a distance of about 350 ft. However, the system is provided with air and power for a maximum of 600 ft. in preparation for possible expansion of the station. The time for unloading the entire barge is 18 hours, including all clean-up. This is an average of about 360 bbl. per hour.

Truck loading is accomplished by two 14-in. Airslide conveyors, rated at 1,000 bbl. per hour, which provide a means for loading a 120-bbl. capacity truck in less than 15 minutes. The actual loading operation is accomplished by remotely-controlled



The packer for cement bagging is fed by a 1,200-cu.-ft.-per-hour conveyor delivering to the elevator which serves the packer.

two highly flexible pneumatic bulk cement conveying systems permit a Seattle company to use cheap water transport

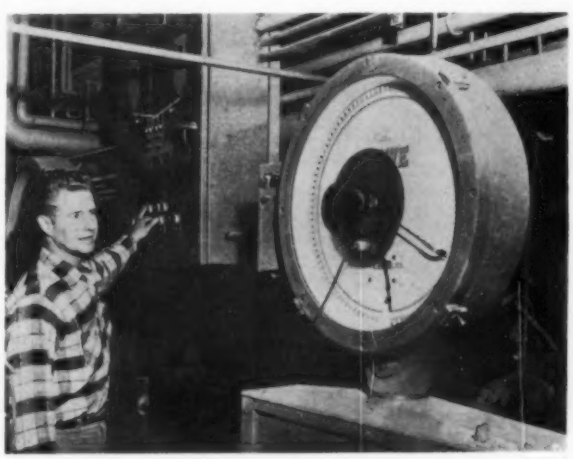
Airslide conveyors from the silos into the loading hatches of the truck.

There are two complete and similar truck-loading stations, each withdrawing from two silos simultaneously, with two converging Airslide conveyors and two control stations. Dual weighing stations are provided, so that each axle loading can be accurately made. It should be noted that each Airslide conveyor has two converging discharge points, so that it is necessary to have only one pair of loading hoses per station.

The truck loading, regulated from a centrally located control panel, starts after the truck hatches have been opened and the loading hoses have been lowered into them. The operator, by means of selector switches on the control panel, sets the power-operated side-discharge gate of the Airslide conveyor at the half-open position and the flow gate at full capacity, so that each end of the truck will be loaded simultaneously, at the rate of 500 bbl. per hour each.

The scale is pre-set to the minimum full weight. As soon as the scale reaches minimum full weight, the flow gate is set to dribble position, bringing that end of the truck to accurate final weight. The diverting gate is then switched to direct the flow to the other end of the truck, bringing that end up to the maximum full weight. The system shuts off, automatically.

A part of the cement output of the distributing plant is in bags. The cement is reclaimed from any one of the four storage silos by means of an 8-in. Airslide conveyor to the packer bin elevator, at a rate of 300 bbl. per hour. The packer, rated at 1,200 sacks per hour, is mounted on the loading dock.



A control station provides semi-automatic operation of the truck loading conveyors.

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This revolutionary multi-wall is a real advancement in the science of bag closure. Unlike ordinary multi-wall pasted valve bags, the Arkell & Smiths "Step-Flex" Bag is triple-sealed top and bottom to eliminate sifting of fine materials. The plies forming the multi-wall construction are staggered on the ends, and each ply on one side of the bag is pasted to the corresponding ply that it overlaps on the opposite side of the bag . . . . . at both top and bottom.

This improved construction forms a positive sift-proof seal and actually makes the top and bottom of the bag even stronger than the walls!

Since the size of the orders for this new bag are increasing daily, we recommend that you let us know your requirements immediately! Write, wire or phone today.

P.S. There is no upcharge for the triple-sealed "Step-Flex" Bag.

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More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

COMPLETE DATA ON CONVEYOR, ELEVATOR, AND TRANSMISSION BELTING is included in the new *Boston Woven Hose & Rubber Company's* belting catalog. Reference tables, specifications, and recommendations are presented, in addition to charts giving belt weights and descriptive data. (1)

INDUSTRIAL FRICTION MATERIALS are discussed in an illustrated brochure issued by *Johns-Manville*. The booklet, which covers asbestos brake blocks, linings, and clutch facings, gives pertinent characteristics of the various J-M friction materials. A section on design data is included. (2)

TRU-LAY PUSH-PULL REMOTE CONTROLS are described in detail in literature available from the manufacturer, the *Automotive and Aircraft Division, American Chain & Cable Company, Inc.* Standard assemblies, bracket type head controls, and heavy-duty micro control and hand-operated assemblies are described. (3)

LIQUID GEAR COMPOSITION is featured in a folder offered by the *Whitmore Manufacturing Company*. The new oil for open gear lubricating may be poured, brushed, or sprayed on the pressure side of gear teeth, leaving a tough film which eliminates metal-to-metal contact. (4)

A PICTURE HISTORY OF THE MANITOWOC COMPANY, INC., and its subsidiaries is presented in a profusely illustrated 96-page book. The scope, equipment, and products of Manitowoc Shipbuilding, Inc., Manitowoc Equipment Works, and Manitowoc Engineering Corporation are illustrated. (5)

REFRACTORY MATERIALS are presented in a condensed catalog just published by the *Richard C. Remmey Son Company*. Designated Bulletin RB-20, the catalog covers 19 standard brands of Remmey refractory brick. Other Remmey products, including mortars and kilns, are also described. (6)

CHEM-JET DUST CONTROL SYSTEMS for rock crushing plants, cement plants, and mines are explained in literature available from *Johnson-March*. The equipment, including specially developed Compound M-R, and its advantages are described, along with application photos. (7)

MODEL 102 DAVIS LOADER, especially designed for International Harvester tractors, is described in a booklet published by *Mid-Western Industries, Inc.* Features and specifications for the Model 102 are given, in addition to illustrations of other Davis attachments. (8)

MAGNO-THERM OXYGEN RECORDERS are featured in an illustrated brochure available from *The Hays Corporation*. The booklet is divided into sections describing the two parts which comprise the recorders—an analyzing section and a recording section; gas sampling systems; and special models available. (9)

THE TM MOBILE MIXER, a portable asphalt plant that is self-contained on a single trailer frame, is featured in a new bulletin released by the *Standard Steel Corporation*. Essential parts of the plant are thoroughly discussed and illustrated. Specifications are included. (10)

A NEW ENGINEERING MANUAL and catalog of clutches has been released by the *Marland One-Way Clutch Company*. The manual contains a complete explanation of the Marland operating principle, design features, construction, and a comparison of clutch designs, and includes information on application methods and safe selection procedures. (11)

A BIOGRAPHY OF THE AUTOCAR TRUCK—from the design stage to the production line to the job site—is told pictorially in a newly-released booklet available from the *Autocar Division, The White Motor Company*. (12)

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PANALARM ANNUNCIATOR SYSTEMS for industry are described in a 32-page catalog published by the *Panalarm Division, Panellit, Inc.* Functions, general features, and typical industry applications are included, in addition to specifications and technical data. **(13)**

U. S. LAYTEX ROYAL MASTER PORTABLE CABLES are discussed in a booklet available from the *United States Rubber Company.* Structural features are illustrated and a detailed explanation of Laytex rubber insulation is offered. Results of cable testing are given. **(14)**

THE COMANCHE, a new portable dual crushing plant manufactured by *Lippmann Engineering Works, Inc.,* is the topic of a bulletin now available for distribution. Details and specifications on the four models — Comanche Cub, Comanche Scout, Comanche Warrior, and Comanche Chief—are contained in the bulletin. **(15)**

MODEL 30 CORE DRILLING MACHINE, a product of *Sprague & Henwood, Inc.,* is covered in Bulletin No. 350, which describes and illustrates the features and contains complete specifications and types of mountings available. **(16)**

BULLETIN 1083, recently released by the *White Diesel Engine Division, White Motor Company,* features the improved Model 40 stationary portable and trailer mounted engine-generator sets. Dimension drawings, photographs, and charts explain the various generating sets. **(17)**

LINC-WELD MOTORS, the *Lincoln Electric Company's* line of electric motors, are presented in an informative brochure now available. Specifications, design features, and illustrations are given. **(18)**

AIRCO EASYARC 10, a new iron powder electrode available from the *Air Reduction Sales Company,* provides a shallow rippled, smooth weld deposit in all positions including vertical down. Easyarc 10 is particularly suitable in applications where out of position welding is encountered. More information is available from the manufacturer. **(19)**

CRAWLER-MOUNTED MODEL C-35 BANTAM, manufactured by the *Schield Bantam Company,* is described in Bulletin No. C-101. Detailed information, specifications, features, capacities, and application data for the 5-ton crane-excavator are included. **(20)**

THE D9 IN ACTION is the title of a booklet recently published by the *Caterpillar Tractor Company.* The booklet contains construction features, application data, and photos of the D9. **(21)**

THE SHARPLES SUPER CLASSIFIER, an air vortex classifier for all types of fine materials, is the subject of Bulletin No. 1280, published by the *Sharples Corporation.* A diagram illustrates how the classifier operates and a flow diagram shows the usual arrangement of the classifier with its auxiliary equipment. **(22)**

BULLETIN NO. 6-56, available from the *American Manganese Steel Division, American Brake Shoe Company,* includes cross-sectional and cutaway drawings of the AMSCO "MF" welder and its component parts and explains in detail how the machine operates. AMSCO tubular electrodes are also discussed. **(23)**

BELTING, HOSE, BRAKE LINING, AND BLOCKS manufactured by the *Thermoid Company* are pictured in a 12-page manual which contains application data and size specifications. Cutaway drawings show construction details. **(24)**

LE ROI-CLEVELAND ONE-USE DRILL BITS, their construction, specifications, and the preparation of drill rod shanks, are given in a bulletin published by the *Le Roi Division, Westinghouse Air Brake Company.* **(25)**

MODEL 254 TRUCK MOUNTED CRANES AND EXCAVATORS are fully illustrated in a new brochure issued by *The Hanson Clutch and Machinery Company.* Details of boom construction, upper machinery deck, patented hoist and crowd assemblies are pictured. **(26)**

DECEMBER, 1956

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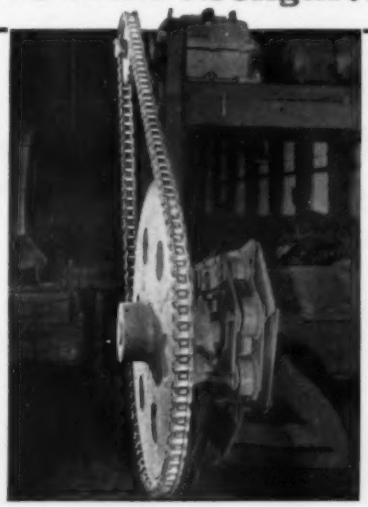

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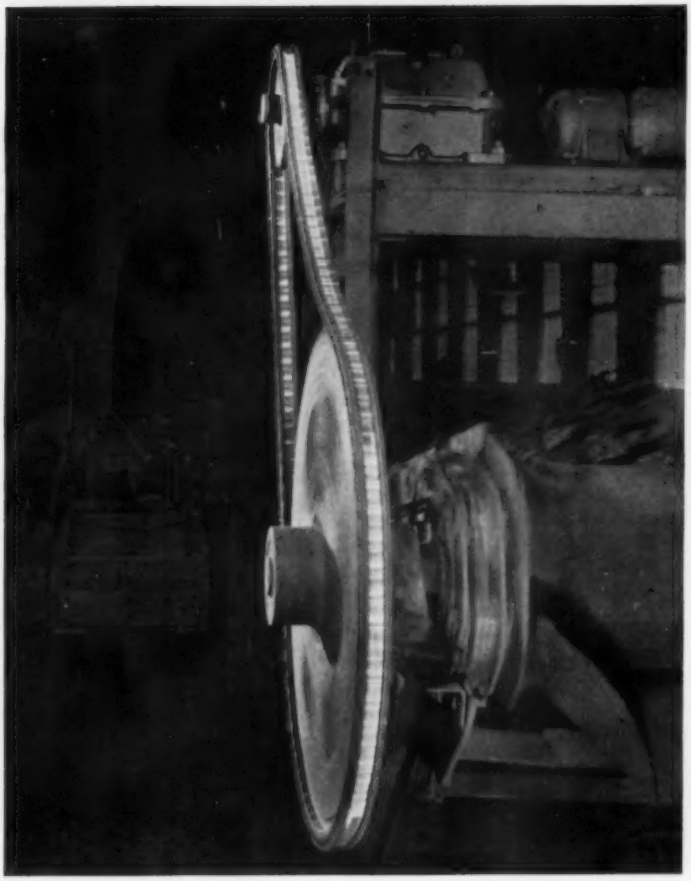

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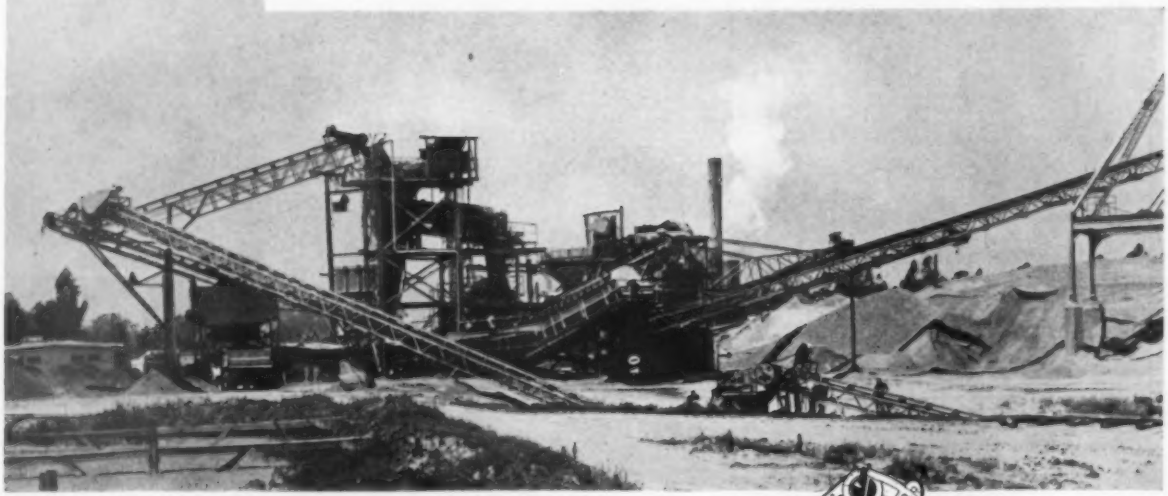
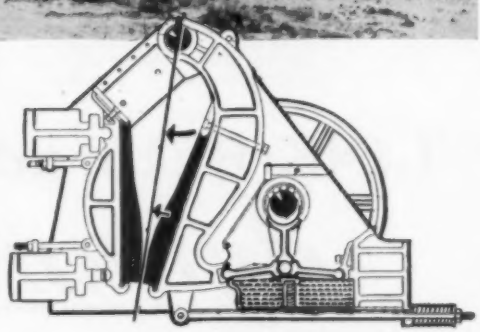
KUE-KEN® CRUSHERS KEEP OPERATION COSTS DOWN IN THIS EFFICIENT GRAVEL CRUSHING PLANT



The Kue-Ken jaw and gyratory crushers used exclusively in this southern California plant producing aggregate and asphalt mix have 25% to 50% greater capacity than other crushers of their size. The jaw crusher operates at a higher rpm yet actually consumes far less power. Shutdowns common to conventional crushers are practically eliminated. Filtered oil lubricates the mechanism in a sealed, dust-tight crankcase to prevent wear. Breakage from overload is eliminated by automatic flywheel release that is quickly reset.



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See how the hinge pin is located on the center line of the crushing zone. The jaw moves in an almost straight line. Rock is instantly gripped and crushed without rubbing.

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Iowa Producer Employs Fixed and Portable Plants To Supply County Needs

A LARGE number of the limestone and roadstone users in Clinton County Iowa, can call upon ten conveniently located pits, all within a 25-mile radius of Charlotte, for their material needs. Previously owned and operated for about six years by the firm of Nichols and Schrader, these pits were recently purchased by Farquhar Quarries, Inc., a corporation headed by K. R. Farquhar and formerly located at Red Oak, Iowa.

In addition to the 2nd Avenue quarry near Clinton, where an average hourly output of 250 tons is maintained, and the quarry at Elwood, a 170-t.p.h. operation, the Farquhar firm has pits at Teedes Grove, Goose Lake, Folletts, Grand Mound, DeWitt, Wheatland, Petersville, and DeWitt, Iowa.

In describing the 93-acre quarry about one-half mile west of Clinton, Mr. Farquhar identifies the limestone formation as a part of the LeClaire ledge. Average thickness is about 45 ft., and the ledge is topped with 15 to 20 ft. of overburden. As a rule, the latter is removed under contract by the firm of Foley & Paulson, Clinton contractors, who strip the material with two Caterpillar D-8's, two Allis-Chalmers scrapers, and an Allis-Chalmers HD-16 'dozer.

Noting that drilling patterns vary with every site, Mr. Farquhar states, "No two pits are alike. A limestone ledge may vary here from 15 to 50 ft. As every good quarry man knows, drilling patterns are different, and types of drills used depend on the pattern and ledge thickness." As an example, he points out that while a 12- by 16-ft. pattern is put down with churn drills at one location, at another site, wagon drills are used in setting a 5- by 9-ft. pattern.

A factor common to all, however, is the use of Dupont explosives—consisting primarily of 50 percent Red Cross powder mixed with 40 percent gelatin. Approximately two to three tons of rock are brought down per pound of explosive used.

In a typical drilling procedure at the Clinton quarry, a Cyclone cable tool drill is employed in sinking 6-in. diameter holes to a depth of 45 ft. Using a 10- by 16-ft. pattern, about 20 holes are charged for each shot. Superintendent John McKenzie states that a 5-in. diameter dynamite stick and about 275 lb. of explosive are used for each hole. Primacord and electric caps are used for detonators. Mr. McKenzie states that when secondary blasting is necessary, the same 50 percent Red Cross explosive is used in smaller amounts, and with 1⅛-in. diameter dynamite sticks.

Broken rock is loaded out by a pair of Bucyrus-Erie 22-B shovels into six haulage trucks equipped with 8-ton hydraulic dump bodies. Three of these units are F-8 Fords, and the other three are Chevrolets. The short haul route between shovel and plant hopper—⅛ mile with a 20 percent grade—is maintained with a Caterpillar D6.

Making an individual average of about 20 trips per hour, each haul-

(*Continued on page* 115)

While one of the trucks at the Clinton operation of Farquhar Quarries is being loaded, another spreads sand on the quarry floor for haulage route maintenance.

Left to right: William West, shovel operator; Dave Houtchens, mechanic; Glenn Clinton superintendent; Ken Farquhar, president.

How To Save Money... On Depreciation

By PAUL LOCKWOOD

NONMETALLIC minerals plant management can save income tax dollars by a careful application of the depreciation allowances this year. The accelerated depreciation allowances are far more realistic than the old straight-line method and they more nearly represent the true worth of your plant equipment subject to depreciation.

If you have purchased new plant equipment or contemplate purchasing any before the end of this year, you can apply the double declining balance method of depreciation on this equipment. It will save you tax dollars this year; and if properly handled during the time you own it and when it is replaced, you will have a large overall income tax saving. Second-hand or used equipment does not qualify for the accelerated depreciation methods.)

Here's how the double declining balance method of depreciation works:

1. Determine the new equipment's useful life. In calculating your depreciation under this accelerated method, you will need to determine the estimated life of the particular piece of plant equipment. You can use the normal time you have been using for similar equipment, refer to the Bureau of Internal Revenue's Bulletin "F" for average useful life of specific equipment, or make an estimate based on your own judgment of the current usefulness of the equipment.

These figures in Bulletin "F" are guide figures. The list covers everything from agitators to weightometers and assigns years of useful life to each. For instance, agitators have an estimated life of 20 years, crushers have 25 years, and revolving screens have a 20-year useful life. You can use these figures or base the estimated life on your own experience and judgment.

2. Reduce to an annual percentage. The percentage figure will be the percentage of the total cost of the equipment that is charged off each year. For instance, you might purchase some plant equipment for $3,500 and it would have a five-year useful life in your estimation. You would also estimate that at the end of five years the equipment will have a salvage value of $500. You would take an annual depreciation of one-fifth (20 percent) of the $3,000 depreciable value each year. Equipment that might have an estimated 20-year useful life would have 5 percent of its value charged off each year.

To determine this percentage figure, divide the number of years in the estimated life of your new equipment by 100. This is the same method used to calculate the annual charge-off under the former non-accelerated income tax regulations.

3. Double this percentage figure. This is where the income tax savings enter the picture when you use this accelerated depreciation method. Instead of using the regular percentage figure, with the double declining balance method of calculating depreciation, you *double* this figure.

For instance, if you have new plant equipment with an estimated useful life of five years, you would normally charge off 20 percent of its net cost each year. With this plan you double this percentage figure and have a 40 percent depreciation deduction for each year.

4. Deduct the doubled percentage figure as depreciation. After determining the annual percentage figure to be used with the double declining balance method, you deduct this from the original purchase cost (less salvage value) for your income tax depreciation deduction.

For instance, in the illustration of $1,000 worth of plant equipment with an estimated life of ten years, you would have a 10 percent annual depreciation under the old straight-line method. With a new double declining balance method, you double this to 20 percent. Next, you deduct this from the cost ($1,000), or deduct $200 as a depreciation allowance this year.

5. Apply the same percentage to the balance. This is where the new method of calculating depreciation for plants gets its name. In each succeeding year you own the equipment, you use the same percentage figure on the *balance,* not on the first cost figure.

As a case in point, with the same illustration of $1,000, the first year you would deduct 20 percent of this or $200. The second year, you would again use the 20 percent figure, but on the remaining balance or $800 ($1,000 less the first year's depreciation of $200). This would give you a second year depreciation of $160 on you requipment.

This is how it would work out for the ten-year estimated life of equipment under the old straight-line method and under the faster accelerated double declining balance method of figuring your depreciation:

	Straight-Line	Declining Balance
1st year	$100	$200
2nd year	100	160
3rd year	100	128
4th year	100	102
5th year	100	66
6th year	100	66
7th year	100	53
8th year	100	42
9th year	100	33
10th year	100	27

Thus, you can quickly visualize the income tax savings you will have in the early years you own your new plant equipment. In this example, your depreciation deduction is greater for the first four years with the double declining balance method of calculation than it is with the straight-line method.

In theory, you would never completely depreciate the equipment with this double declining balance method. You would always have a balance to be depreciated because you apply the established percentage figure to the *balance*—not to the original cost. In this illustration, you would have a balance in your asset account of $107 at the end of ten years of depreciating if you kept using the double declining balance method for the full ten years.

6. Change methods later. When you discover that your rate of depreciation is less under the double declining balance method than under the old straight-line method, you should make a shift in methods. The Internal Revenue Code permits you

to shift from the double declining balance method to the straight-line method whenever you so elect.

However, when you make this shift in methods, you must use the remaining balance of cost as the base figure for your calculations. For instance, in the example cited we find that at the end of the fourth year, the balance swings in favor of the straight-line method. We take the balance of the cost, $410, and divide this by the number of years remaining (6) and get an annual rate of $68. This is less than the double declining balance method figure of $82 for that year.

Next, we try the fifth year and find that at the end of that year we have a remaining cost of $328 divided by the number of years remaining (5), which gives us an annual rate of $65. This compares favorably with the double declining balance method ($66); therefore a change in methods should be made at this time.

With the same example used for illustration of $1,000 worth of new plant equipment with an estimated ten-year life, the comparative figures work out this way:

	Straight-Line	Declining Balance
6th year	$65	$66
7th year	65	53
8th year	65	42
9th year	65	33
10th year	65	27

This system provides an opportunity to write off new equipment through the double declining balance method and then to depreciate the equipment completely by a shift to the straight-line method.

7. Sell old equipment—don't trade. It is often essential to replace a piece of old equipment before it is completely depreciated on the books. The estimated life may be the length of time the equipment will last, but to be competitive and to keep up-to-date, the purchase of modern equipment is a must.

When a decision is made to buy new equipment, there is a tax problem. *Sell your old equipment—don't trade!* When you sell your used equipment, you have a gain over what your book value of the old equipment may reveal. However, this is a long-term capital gain, and your income taxes on this will be a great deal less.

St. Lawrence Cement Co. Beats Scheduled Opening Of New Plant by 3 Months

St. Lawrence Cement Company's new $27,000,000 plant at Clarkson, Ont., Canada, has gone into production three months ahead of schedule. A special feature of the plant is an electrostatic dust collector, designed to recover approximately 99 percent of dust exhausting from the 555-ft. chimney.

A second kiln at the Clarkson plant is scheduled to start production early next spring, increasing capacity by 1,600 tons of cement per day.

St. Lawrence has another cement plant, located in Quebec, which has been in production for two years.

The first shipments of cement into Ohio, Michigan, and Indiana from the new Paulding, Ohio, plant of the Consolidated Cement Corp., Chicago, Ill., has begun. Additional facilities have already been started to raise the capacity of the 1,250,000-bbl. per year plant to 2,500,000 bbl.

Iowa Producer

(*From page* 113)

age truck dumps into a 10-cu. yd. hopper at the plant site. Transferred from the hopper on an apron feeder, the rock is discharged into an Iowa Manufacturing double impeller impact breaker driven by a G M C 6-110 diesel motor. Secondary crushing is accomplished with a Pioneer triple-roll unit driven by a set of twin 6-71 G M C diesels. An Iowa Manufacturing twin-roll crusher—the rolls also driven by a 6-71 G M C—is used as a finishing unit.

Approximately 25 percent of the product, which ranges from ⅛-in. up to 2-in., is sold as agricultural material, a substantial quantity for industrial use, and the balance as aggregates for highway construction. Power for screening equipment and lighting is provided by a Westinghouse 37½-kv.-a. generator. Stockpiling and rehandling of the plant products is accomplished with a ¾-cu. yd. 304 Koehring shovel.

The Elwood quarry, superintended by Waldo Wendell, also produces agstone and road aggregates. At this location a 55-ft. ledge is being worked. Blastholes are normally drilled on a 12- by 16-ft. pattern by a Mayhew rotary air-type drill with a 6⅝-in. diameter bit. With 450 lb. of explosive per hole, from 10 to 20 holes are charged for each shot.

A view of the quarry site near Elwood where processing is carried out with portable equipment.

Broken stone is loaded directly from the operating face by a Bucyrus-Erie 22-B shovel into a Cedarapids portable crushing plant. The jaw crusher and hammermill on this unit are powered by a Caterpillar 318, and twin 6-71 G M C diesels, respectively. Crushed stone is then fed to a portable screening plant. Stockpiling and rehandling of the 1⅛-down to ⅛-in. material produced by this plant as accomplished with two 7½-ton Koehring Dumptors and a Dodge truck equipped with a 8-ton capacity hydraulic dump. Overburden stripping and cleanup are handled by an Allis-Chalmers HD-15.

This expanding firm is headed by Ken Farquhar, president, and O. W. Lawrence, secretary-treasurer.

Photo by American Smelting & Refining Co.

Screen sifting of fluorspar ore prior to haulage by truck to the Agujita mill.

American Smelting & Refining Processing High-Grade Ore In Mexican Fluorspar Mill

BASED on a conviction that requirements for fluorspar on the part of United States industry would materially increase, and due to the fact that this country is not self-sufficient with respect to natural reserves of that mineral, the management of the American Smelting and Refining Company decided in 1953 to enter the fluorspar picture in Mexico.

The decision to invest in holdings in that country was a natural corollary of the rapid strengthening of that country's position in the fluorspar export market—despite the fact that its potential was just being realized as recently as 1952. While Spain and Newfoundland had been the main sources of imported spar until that year, Mexico, which exported 58,000 tons to the United States in 1949, began to take form as a major shipper, and in 1953 exported 193,000 tons to this country, or nearly 53 percent of the total imports.

Following the decision to initiate Mexican operations, American Smelting acquired ore reserves and erected a mill and flotation plant for the production of acid-grade concentrate at Agujita in the State of Coahuila. Completed in June, 1953, the mill is known as the Encantada plant and is rated at 2,200 tons of acid-grade concentrate per month. Shipments from this facility, which is owned by the Cia. Minera Nacional, S.A., began in July of 1953.

In lieu of engaging in actual mining operations itself, and in order to assure a livelihood for the Mexican families who work on the outcroppings of the many individual and scattered deposits, the firm purchases its mill requirements from these local miners. The latter employ the pick-and-shovel method on the outcrops, and hand sort the material at the excavation site prior to loading trucks for delivery to the mill, where it is weighed, assayed, and paid for.

A general view of American Smelting and Refining Company's acid-grade fluorspar mill at Agujita, Mexico, which is rated at 2,200 tons of concentrate per month.

Stockpiled at the plant according to grades, the spar assays from 75 to 97 percent CaF_2, substantially superior to that mined in the United States.

As required, the stockpiled ore is introduced into the mill flow, which is comprised basically of the following: primary and secondary crushers, surge bins, a ball mill, conditioners, flotation cells, a Denver thickener and filter, a dryer, and a dried concentrate loading bin.

Although the bulk of the marketable product is loaded for shipment in covered railroad hopper cars, of which the firm maintains its own fleet at the plant, an increasing tonnage is being shipped in bags, under the brand name "Minac," for the glass and ceramic industries.

(*Continued on page* 122)

Photo by American Smelting & Refining Co.

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CHAIN SYSTEM INSTALLATIONS IN CEMENT KILNS

PART II

By W. R. DERSNAH
Process Engineer
Portland Cement Association

OPERATION

Raw Materials Every common type of raw material used for portland cement manufacture is used singly or in combination in one or more kilns equipped with chains. An uncommon raw material is used in only one wet process kiln not equipped with chains. It is not felt that this is the reason for the absence of chains. Chemically, the material in this instance resembles the common types used to supply CaO. The chemical properties of the raw materials should not be expected to have any bearing on the use or properties of a chain system since only evaporation of water is anticipated, and experience has shown no evidence of chemical alteration of the raw materials at this stage that could be deleterious to the chains. The variable moisture content of the common raw materials is a function more of physical than of chemical properties.

Raw Material and Nodule Moisture Both fineness and particle shape affect the moisture requirement. The moisture content of the raw materials and of the nodules leaving the chain section actually determine chain requirements. More finely ground raw materials require more moisture for a slurry of the same pumpability. Particles with a high fineness, such as clay, require relatively more moisture than granular particles. Particles with an irregular shape require more moisture than spherical particles of the same size. Flat, disk-shaped particles, such as ground oyster shell, require more moisture because of the stacking property which holds particles together.

The difference between the moisture required to make a pumpable slurry and the desired nodule moisture is the amount of moisture which must be evaporated in the chain system, and it is actually of prime importance since it determines the amount of chain required, based on lineal feet or surface area. Clay particles in the mix aid in the formation of dense and strong nodules, while higher percentages of silica reduce the strength.

Whether or not the nodules formed in the chain system actually hold together in their passage through the calcining zone is an interesting consideration.

In three plants observed, nodules have been found throughout the calcining zone when the kiln was shut down rapidly without allowing the load to be removed. In one of these instances there were nodes of nodules alternating with areas of dust. The kiln was fluctuating just prior to this shut-down. In all three of these plants where nodules have been found, the clay content in the raw material was 10 percent or over.

Addition of Dust Addition of stack dust which must pass through the chain section has two effects on kiln operation. Erratic addition of flue dust, especially the finer sized particles trapped in electrostatic precipitators, causes variations in the moisture content which

GENERAL INFORMATION ON THE USE OF CHAINS

1. Type of Heat Recuperator (based on 75 plants)

Chains	Filters	Waste Heat Boilers	No Recuperator (Short Kilns)	No Recuperator (Long Kilns)
58	9	4	3	1
77.3%	12.0%	5.3%	4.0%	1.3%

2. Type of Chain System (based on 56 plants)

Curtain Chains Cross Sectional Suspension	Curtain Chains Helical Suspension	Loop Chains Cross Sectional Suspension	Loop Chains Helical Suspension
2	1	48	5
3.6%	1.8%	85.7%	8.9%

3. Links (based on 56 plants)

⅛" elliptical	⅛" circular	⅛" figure 8	¾" elliptical	¾" figure 8	1" elliptical
30	1	12	10	1	2
53.6%	1.8%	21.4%	17.8%	1.8%	3.6%

4. Draft (based on 56 plants)

Induced	Natural
52	4
92.9%	7.1%

5. Slurry Moisture (based on 56 plants)

Below 30%	30-34%	35-39%	40-44%	45-49%
1	14	31	7	3
1.8%	25.0%	55.4%	12.5%	5.3%

6. Mud Rings (based on 54 plants)

Frequent Mud Rings (12)

Raw Dust Added	Treated Dust Added	No Dust Added
6	0	6
11.1%	0.0%	11.1%

Few Mud Rings (42)

Raw Dust Added	Treated Dust Added	No Dust Added
15	2	25
27.8%	3.7%	46.3%

7. Changes in Chain Systems (based on 54 plants)

Changes	No Changes
41	13
75.9%	24.1%

may cause mud rings to form. Addition of flue dust which has been partly calcined often causes rings since the material is cementitious and combines with moisture in the slurry. Dust from the front end of the kiln which is trapped in the chain section by the slurry and chains may cause rings. This would be more prevalent in sparse chain systems, where the dust could get to the damp part of the chain section before being stopped.

If dust causes rings in the chain section, two remedies are available: (1) A scoop arrangement may be installed below the chains to add the dust as a powder. (2) Waste sugar solutions, molasses, and impure waste sulphite liquor may be added to the dust to render the dust non-reactive with moisture. When additions are made to the dust for this purpose, it is referred to as "treated dust."

It is possible that slurry thinners such as sodium phosphates and waste sulphite liquor may gain prominence not only for their primary purpose of reducing the moisture content, but also for eliminating mud rings when these are due to the addition of flue dust.

Kiln Gases The temperature of the waste gases strongly affects the life of a chain section. Gases passing into a chain section should not be hot enough to soften the chains by heat or promote excessively the oxidation of chains. Excessive amounts of oxygen in the waste gases would also contribute to more rapid oxidation.

Mud Rings Probably many factors enter into the formation of mud rings. Some are operational, while others may be traced to the equipment or to the materials used.

The desirability of stable operation is well known. Changes in the moisture content of the slurry and changes in the velocity or temperature of the kiln gases contribute to multiple fluctuations because of mud ring formation.

In some plants the maintenance of a constant slurry moisture and low kiln exit gas temperature are considered of such importance that moisture is added to the feed end of the kilns. It is generally felt that this moisture does not become a part of the slurry but lowers the back end temperature, so that the moisture in the slurry is retained.

Clinker rings or burning zone rings result in changes in the kiln gas velocity. In some cases the increased velocity due to a ring far back in the kiln might be enough to carry sufficient dust into the chain section to cause a mud ring because of the hydraulic property of the dust.

Kilns with larger diameters, and especially those with chain sections of large diameter, have less tendency towards mud ring formation than small-diameter kilns and chain systems. In some plants, elimination of mud rings has resulted simply from the removal of the lining in the chain system.

When one end of a loop chain breaks loose from its suspension arrangement, it often becomes entangled with several other loops. This tangled mass of chains frequently causes a build-up of hardened slurry.

The addition of untreated dust which passes through the chain system has been especially troublesome in many plants. Mud rings often were practically unknown before the addition of dust was commenced.

Of the 21 plants reported to be adding untreated dust which must pass through the chain system, 6 or approximately 29 percent, were troubled with mud rings. Of the 33 plants not passing dust through the chains or treating the dust, only 6 or about 18 percent had appreciable mud rings.

Granular raw materials, although resulting in weak nodules, are less likely to cause mud rings.

Both high sulphur and high alkalies have been shown to be associated with the development of mud rings.

Cycling Cycling or fluctuating loads are often felt to be due to temporary mud rings alternately forming and breaking, thus releasing heavy loads which had been dammed up behind them.

Many operators feel the real cause of this cycling is a combination of too much drying in the chain system and variations in the rate of fuel feed to the kiln. Apparently the first fluctuation starts by a temporary cut in fuel feed at a time when the load leaving the chain system is dry and powdered, and is being partially carried back into the chains as dust. The temporary lower rate of fuel feed lowers the drying rate in the chain system, and the slurry then leaves the system in moist nodule form, carrying with it the additional load previously carried back as dust.

When this heavier load reaches the burning zone, the burner operator must increase his fuel rate above normal, setting up another period of blow-back into the chains and reducing the kiln load in the section just below the chains. When this light load reaches the front end, fuel rates must again be reduced, and a new cycle of alternately heavy and light loads starts.

A temporary solution is to cut feed rates drastically until the kiln is on light load throughout the full length. The load then can be increased gradually until it is back to normal. A suggestion for a more permanent solution will be found under the heading Chain System Design in the summary.

Percent Capacity Operation Kilns, with their chain systems, are rated for certain capacities. During periods of heavy demand for cement, equipment is often operated at increased production rates. Kilns are more easily adapted to operation over rated capacity than are chain systems. Increasing the output will almost invariably increase the fuel requirement per barrel of clinker produced. A 15 percent increase in fuel consumption per barrel is not unusual. Three factors affecting chain efficiency are involved: (a) increased velocity of kiln gases, (b) increased temperature of waste gases, and (c) increased load thickness which reduces the proportional area exposed to the heat.

The chain system should be adjusted in total volume and density to suit operational requirements. Modern kiln installations are often designed especially for this purpose. The hangers or suspension ribs at the discharge end of the chain usually extend beyond the position of the initial chain installation. This arrangement simplifies the task of adding chains, should the nodule moisture prove to be too high.

Since calcination does not proceed until the moisture in the nodules has been removed, moisture content in the nodules leaving the chains should be maintained at about 10 percent. The nodule moisture should be high enough to allow the raw material to get out of the chain section in a damp enough condition so that the chains do not grind it to powder which will be agitated and carried back into the chains as dust. Increases in chain density which reduce the moisture to this point then have the effect of lengthening the calcining and burning zones of the kiln.

Sometimes increasing the density of the chain section, rather than the length, would prove beneficial. However, circumferentially dense chain systems must be used with care since plastic raw materials are not readily transported through such systems,

MOISTURE EVAPORATION CONVERTED TO COMMON EQUIPMENT AND OPERATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14
							Moisture Evaporated (lb/hr/ft of chain)						
	Link		Chain	Percent	D	As	As used converted to						Group
Plant	Size	L/D	lb./ft.	Capacity	Inside Lining	Used	⅝" link	L/D=35	⅝" wt.=4.15	D=10	100% cap.	Average	Average
C	¾	23.4	5.80	100	10-5/12	2.31	1.91	1.93	2.41	2.51	2.31	2.21	
D	⅝	23.8	6.25	100	8-3/4	3.48	2.86	2.93	3.37	2.67	3.48	3.06	
G	¾	43.5	5.80	130	10	2.96	2.45	3.34	3.12	2.98	2.29	2.84	2.70
A	⅝	34.8	4.50	100	11	2.99	2.99	2.97	2.76	3.60	2.99	3.06	
B	⅝	28.4	3.85	90	10-7/12	2.99	2.99	2.49	3.22	3.34	3.32	3.07	
E	¾	43.4	6.00	100	10	5.40	4.44	6.04	5.46	5.40	5.40	5.35	
F	⅝	36.7	3.85	153	10-1/4	4.40	4.40	4.51	4.75	4.63	2.88	4.23	
H	¾	39.9	6.17	114	11+10	4.46	3.67	4.74	4.38	4.92	3.91	4.32	
I	⅝	34.8	4.20	109	9-3/4	2.82	2.82	2.81	2.78	2.68	2.59	2.74	
K	⅝*	35.7	4.00	112	10	5.19	4.67	5.24	5.39	5.19	4.63	5.02	
L	⅝*	41.3	4.94	126	9-5/6	3.59	3.23	3.92	3.02	3.48	2.85	3.30	
M	¾	41.6	6.15	121	11-1/12	3.86	3.18	4.22	3.81	4.73	3.19	3.83	
O	⅝	40.8	4.46	162.5	10-1/2	5.98	5.98	6.48	5.57	6.60	3.68	5.66	
P	⅝	25.8	4.40	100	10	5.37	5.37	4.62	5.06	5.37	5.37	5.16	
Q	⅝+⅝+1	37.5	4.40+6.25+7.50	113	10	2.80	2.30	2.90	2.81	2.80	2.48	2.66	
R	¾*	41.7	6.90	128	9-1/3	5.10	3.78	5.59	4.48	4.44	3.98	4.45	4.07
J	⅝+¾	31.0	3.85+6.25	85	11+10-1/3	1.14	1.00	1.07	1.16	1.30	1.34	1.17	
N	⅝	40.2	4.10	100	9-1/3+10-7/12	6.63	6.63	7.12	6.70	6.52	6.63	6.72	
Av.**						3.98	3.56	4.05	3.89	4.08	3.46	3.81	

*Distorted or figure 8 link.
**Plants J and N not included in averages.
Col. 7—Moisture evaporated in lb./hr./ft. of chain in current plant operation.
Col. 8—As used times 65/79 for plants using ¾" chain.
Col. 9—Average of as used and as used × L/D divided by 35.
Col. 10—As used times 4.15 divided by weight of ⅝" chain or as used times 6.06 divided by weight of ¾" chain.
Col. 11—As used times D² divided by 10².
Col. 12—As used times 100 divided by (% capacity).
Col. 13—Average of columns 8-12.

and back-spill may result if the feed is increased beyond the transport capacity. Lengthening the chain system might cause the lower end to be more rapidly destroyed by oxidation. A short dense system would have more effect than a longer less dense system on trapping dust carried by the higher velocity gases. A further advantage of a short dense system is that the effective length of the calcining zone would be increased proportionately.

SUMMARY

In order to allow comparisons of the effectiveness of the chain systems studied and to provide for calculations concerned with the alteration of existing systems or the installation of new ones, the table above was prepared. At each plant the moisture evaporated under present conditions has been converted to show what evaporation might be expected with changes to a basic arrangement of (1) chain link size, ⅝ in.; (2) chain weight, 4.15 lb. per ft.; (3) kiln diameter, 10 ft.; (4) L/D ratio, 35; and (5) operating capacity, 100 percent.

Further, after these losses have been converted to a basic arrangement of equipment, it is possible to compare the effectiveness of the types of chain systems included in the table by comparing average unit moisture losses in column 13. Also by comparison, estimates can be made of moisture losses that might be effected by changes in the link size or weight, changes in chain system diameter, or percent capacity operation in a particular kiln.

The following discussion is divided into two sections. The first section explains the derivation of the factors used to convert existing kiln chain systems to the common basic arrangement previously mentioned. The second section discusses factors to be considered in designing a chain system for a particular kiln and for given operating conditions and materials.

Derivation of Conversion Factors

For various sizes and shapes of links; surface areas (Column 8)

1. Experience has shown that various sizes and shapes of links will evaporate different amounts of water, primarily because of differences in surface area. In column 8 of the table moisture evaporated per hour per foot of chain has been converted to show what evaporation could be expected if all the kilns had been equipped with ⅝-in. elliptical proof coil chains.

The change was made by multiplying the present or "as used" moisture evaporated (column 7) by the ratio of the surface area of ⅝-in. chain to the surface area of the chain used. In the case of ¾-in. chains this meant multiplying by 65/79. Evaporation by figure 8 or distorted chains was reduced by 10 percent before the other calculations were made because of the larger surface area of this particular shape. Using equal lengths, ⅝-in. chain would evaporate approximately 20 percent less moisture than ¾-in. chains. The influence of chain size on moisture losses can be noted by comparing columns 2, 7, and 8.

For various lengths and diameters of kilns (Column 9)—

2. Short kilns with a small length to diameter (L/D) ratio are known to evaporate relatively more moisture per unit of time and length than long slender kilns because of their higher back-end temperatures. The conversion of evaporation losses to a common L/D ratio and back-end temperature is given in column 9. This was accomplished by first selecting a median value for the L/D ratio of the 18 kilns studied in detail. The L/D ratio of a kiln was then used as an index of evaporation rates due to differences in back-end temperatures. However, since a decrease in gas velocities would result from increases in diameter and partially offset the influence of temperature differences, it has been estimated that moisture losses or gains would be changed by only one-half the amount brought about by making direct L/D ratio conversions.

The figures in column 9 were therefore obtained by multiplying the "as used" moisture loss (column 7) by L/D ratio of the kiln (column 3) and dividing by 35. This figure was then averaged with the original "as used" moisture. Thus, the differences in evaporation losses are one-half those that would be obtained by conversion based on L/D ratios alone. Kilns with L/D ratios greater than 35 have increased evaporation losses, while kilns having L/D ratios less than 35 have decreased evaporation losses.

For differences in weight of chain (Column 10)—

3. Chains of equal surface area but different weights will have different moisture losses. Since such differences exist among the chains in use, a suitable conversion is required for weight differences alone since area was previously adjusted, column 8. In order to recognize this point, the conversion of all chain systems

was accomplished by using the average weight of the ⅝-in. elliptical and ¾-in. elliptical chains used at the 18 plants as a base. It was then assumed that the influence of weight on moisture losses would be in direct proportion to the differences in weights of equal link sizes using ⅝-in. and ¾-in. links as standard. Thus, a link lighter than the average would evaporate less water. The average weight of ⅝-in. elliptical chain was found to be 4.15 lb. per ft. and that of ¾-in. chains averaged 6.06 lb. per ft.

Column 10 includes the adjustments in moisture evaporated due to differences in link weights. This adjustment was made by multiplying the "as used" moisture evaporation by the average weight for its size and dividing by its actual weight. Thus, the links of ⅝-in. stock were adjusted to the average weight for ⅝-in. stock, and the ¾-in. chains were adjusted to their own average. Experience has shown that the moisture evaporation increase in changes from ⅝- to ¾-in. chains corresponds more closely to the 20 percent difference in surface area than to the 50 percent difference in weight.

For Differences in kiln diameter (Column 11)—

4. Column 11 contains calculations based on the assumption that the kiln diameter inside the lining in the chain section was 10 ft. in each case.

Changes in kiln diameter and area result in changes in velocity of the gases. It has been shown that increases in velocity in the range encountered would result in directly proportional increases in evaporation from a plastic mass. A kiln diameter of 10 ft. was selected as a base for conversions. The conversion has been made in each case by multiplying the "as used" evaporation loss by the square of the actual diameter of the chain section and dividing by 10^2 or 100. Kilns with diameters greater than 10 ft. would therefore have increased evaporation losses.

For 100 percent operating capacity (Column 12)—

5. Each kiln was brought to that level of operation which might be expected during normal operation of 100 percent of *rated* capacity. In each case the change in moisture evaporation was obtained by multiplying the "as used" evaporation by 100 and dividing by the percent of operating capacity. It was believed that the moisture losses would be in this ratio because two of the factors affected—back-end temperature and gas velocity — are increased with forced operation, while the proportional surface exposed is decreased. At forced capacity, the increased fuel required normally is burned less effectively, allowing gases to reach the back end at higher than normal temperatures. Increased fuel also requires more combustion air, and the velocity of gases through the kiln is higher. With a heavier load, the surface is not increased in proportion to the volume. At decreased operation, the back-end temperature and gas velocity normally will be reduced, while the proportional surface of slurry exposed is increased.

For all items (Column 13)—

6. The kiln evaporation losses that could be expected in each kiln after conversion has been made to the basic arrangement of equipment are given in column 13. The figures were obtained by averaging the five individual conversions, columns 8 to 12 inclusive. Plants J and N were not included in the averages because of unusual characteristics.

For each system (Column 14)—

7. The average moisture losses for each chain system, curtain and loop, after conversion to the basic arrangement of equipment, was determined by obtaining the average of all kilns, omitting Plants J and N. Considering moisture evaporation alone, the loop systems appear to be about 50 percent more efficient than curtain chain systems. Factors such as dust collection or mud ring formation or ease of maintenance could, however, outweigh this apparent advantage for loop chain systems.

In making comparisons with and between the kilns listed, it should be kept in mind that the figures are relative. The limited number of chain systems involved does not offer the accuracy which might be expected from a greater number of installations. The small number of curtain systems would make a direct comparison particularly unfair; however, it is felt that the calculated results are accurate enough to be useful.

Chain System Design The design of a chain system, although based on experience, allows considerable leeway for preference of selection regarding type, length, density, and method of suspension. The first calculation to be made in the design of a chain system is that of the total moisture to be evaporated. At a given kiln capacity this is the difference in the slurry moisture and desired nodule moisture in pounds per barrel per hour. After this figure is obtained, it is possible to calculate the approximate chain weight and size and the system length required for effective operation by using the data in the table.

It is recommended that the moisture in the nodules leaving the chain system should be approximately 10 percent when the firing rate at the front end is at the maximum, to eliminate periods of blow-back of dust into the chains and the resulting fluctuating loads or cycling. Care should be taken when special slurries are burned, to see that the nodule moisture is the same as with normal slurry.

The total possible length for the chain system may be limited in several ways. Chain systems usually do not extend through a taper section between two areas of different diameters. The temperature of the kiln gases at the lower end of the chain system must not be so high as to damage the chains. The limit is in the neighborhood of 1,200 deg., although the nodule moisture and the decreased draft due to the chains will result in a reduced temperature of the gases, compared with an open or unobstructed kiln.

A loop system should require a somewhat shorter total length than a curtain system of equal density.

Tabulations of chain systems in 149 kilns have shown the average length to be 54.18 ft., with an average open space before the chain system of 15.7 ft. and an average of 19.36 percent of the kiln length equipped with chains. Kilns equipped with chains range in length between 133 and 500 ft., with an average length of 285 ft. The shortest kilns equipped with a complete system were 137 ft. long.

The total chain weight may be limited by the additional load it would add to the existing kiln equipment. However, it is more likely to be determined by the length of chain, and its resulting surface area, of a given link stock as regards the moisture reduction. Total and individual chain weight require more consideration in plants with plastic raw materials where mud rings are more prevalent.

Total chain length depends on the stock used. In a kiln having the basic arrangement of equipment used in the table, columns 8-12 inclusive, it is anticipated that about 3.5 to 4.0 lb. of water will be evaporated per hour per lineal foot of chain.

Variations due to increases in surface area because of larger or distorted links will reduce the length required proportionally.

After the determination of chain

length required and link size and shape as dictated by the moisture content, the density of the chain system will follow.

The kiln draft may determine the density. Installation of a chain system of average density (2 lineal feet per cubic foot) will probably cut the back-end draft in half if no other changes are made.

The proper chain density also depends on the ability of the slurry to pass through. As mentioned previously, chains are suspended to leave a tunnel at the bottom for the slurry and gases to pass through. In loop systems this opening is about one-third of the diameter, whereas in the curtain systems less obstruction is offered, and sometimes a tunnel of only one-fourth the diameter is used.

Usually the density of the first few rows at the feed end must be relatively low to allow the slurry to enter the system.

Two advantages of the loop system are apparent. An increased amount of slurry is carried through the hot gases by chains which are attached at both ends, and there is greater effectiveness of evaporation. On the other hand, maintenance, adjustments in density, and dust removal are simpler with curtain arrangements.

In the choice of a suspension method, the maintenance factor should be given full consideration.

Natl. Gypsum Co. to Build Products Plant in Waukegan

According to Melvin H. Baker, chairman of the board, National Gypsum Company, the firm will build a gypsum building products plant in Waukegan, Ill., as a part of a $19,000,000 expansion program in the Great Lakes region.

This new facility, to be built along the Waukegan harbor on a tract acquired from the Elgin, Joliet & Eastern Railway Company, will provide employment for several hundred men. Construction is expected to be completed in 1958.

Salt-Stabilized Road Plan Initiated on Ohio Highways

Completion of a total of 258 miles of salt-stabilized road was announced recently in Ohio as a part of the state's program to use salt improving 1,108 miles of low-type roads in its highway system. It is planned to use salt-stabilization in surfacing 250 additional miles each year. C. W. McCaughey, deputy director of the Ohio Highway Department, stated that this treatment eliminates the need of adding aggregate and dust-laying material annually.

The Ohio program represents the biggest mileage of salt-stabilized roads undertaken by any state highway department in the United States.

Ohio highway officials report that test sections built last year stood the 1955-56 winter satisfactorily.

Bureau of Roads Estimates Of Highway Material Needs

According to *Mineral Information Service,* published by the California Department of Natural Resources, it has been estimated by staff members of the Bureau of Public Roads that highway construction of all kinds in the United States during the next 13 years will require the following materials: steel—49,000,000 tons; cement—1,399,000,000 bbl.; bituminous material—128,000,000 tons; and aggregates—9,170,000,000 tons.

The report also stated that 442,000 men will be employed directly on highway construction jobs at the peak of the 13-year program.

New Swedish Publication Lists Cement Standards For Over 40 Countries

A *Review of the Portland Cement Standards of the World,* 1955, has been published by Cembureau, the Cement Statistical and Technical Association, Malmo, Sweden. This review is a revision of the out-dated *Tabular Review of the Portland Cement Standards of the World,* published in 1948.

The principal feature of the review is a chapter entitled "Summary of Portland Cement Standards," which gives the chief substance of the national cement specifications in 40 countries.

Information on chemical, physical, and strength requirements, and on various points relating to the testing of cement is found in the chapter called "Portland Cement Standard Specifications and Test Methods."

The price of the publication is s. 18. It may be ordered from the Secretariat of Cembureau, P. O. Box 245, Malmo, Sweden.

American Smelting and Refining

(*From page* 116)

In 1954 American Smelting and Refining expanded its Mexican fluorspar operations by entering the market of metallurgical-grade material with an unusually high-quality ore. This ore, originating in the Paila district, is stockpiled at Castanos, and is screened and shipped *via* boxcars or open gondolas either directly by rail through Eagle Pass, Tex., or to the port of Brownsville, Tex., where it is gathered for shipment in bargeloads up the Mississippi to steel plants in the Chicago and Pittsburgh areas.

The farsighted move by the company is reflected in the fact that increasing evidence points to a doubling of requirements by chemical industry within a few years. With Mexico looming as an increasingly important supplier for the future due to its large, untapped fluorspar reserves, American Smelting's Mexican venture may well prove increasingly more advantageous.

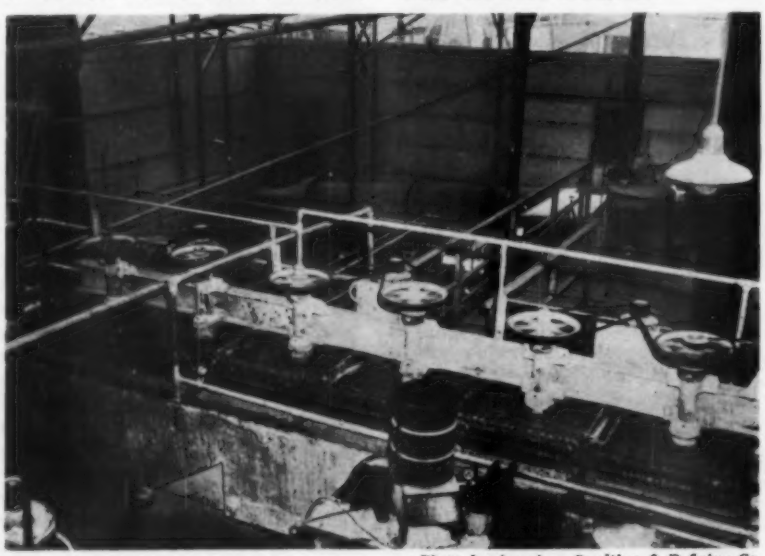
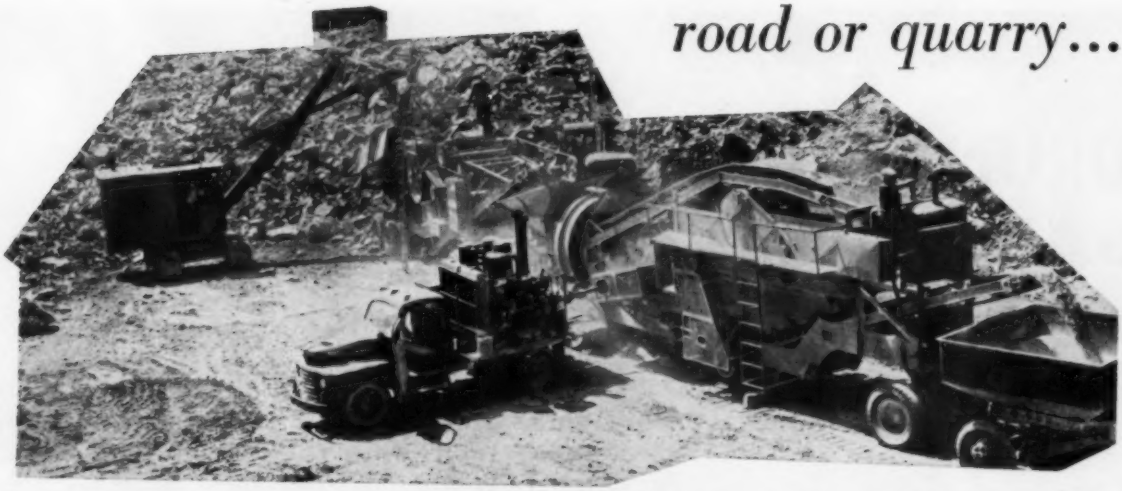


Photo by American Smelting & Refining Co.

Flotation cells (foreground) and dryer (background) housed in the mill building.

road or quarry...



GOOD COMMUNITY RELATIONS

... because of "good-will" methods and techniques in blasting

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BRUNSWICK SAND & GRAVEL COMPANY

Ohio plant uses special classifying equipment to produce silica fines to close specifications for commercial and industrial use

By ROY L. PECK

Another ON THE SPOT Report

LOCATED about 20 miles southwest of Cleveland, Ohio, is the unique sand and gravel operation of the Brunswick Sand & Gravel Company of Crosby, Minn. Here silica sand and pebbles are mined from the Sharon conglomerate and processed into various sizes of aggregates. The unique feature of this organization is that approximately 30 ft. of clay over-burden is removed from the formation, and the materials must be blasted before they can be loaded with a power shovel. The Sharon conglomerate is mined in many different places throughout Ohio, but at no place is an average of 30 ft. of overburden removed before mining operations can be carried on.

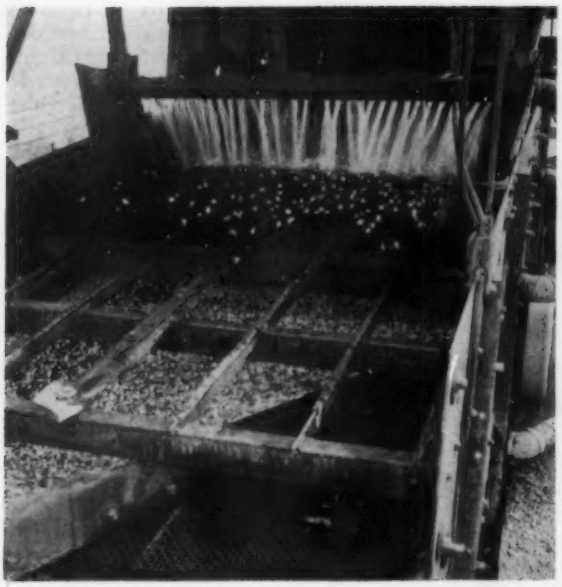
Of special interest in the Brunswick operation is the utilization of a series of sand treatment units, including a hydraulic classifier, dewatering screws, and a cyclone separator to produce sands to various specifications for industrial and construction aggregate use. The exceptionally clean condition of the material as it comes from the pit eliminates the problem of cleaning the sand and gravel. The flow provides for control in the sizing of the various aggregates produced. This plant has been in operation for the last three and one-half years, doing a good job of producing materials which meet rigid requirements.

This general view of the Brunswick plant shows the washing and classifying equipment. The office and truck garage are in right background.

Approximately 30 ft. of clay material must be removed before the conglomerate can be loaded. This material is either removed with a 12-cu. yd. LeTourneau LP scraper pulled by a D8 Caterpillar tractor or 'dozed into the pit by the D8 Caterpillar tractor. The stripping operation is a very important and costly phase of the Brunswick operation. Most of the stripping has been placed in the mined-out areas of the pit; the backfilling will create a lake bottom and shoreline when the pit fills with water.

The conglomerate must be blasted before it can be excavated with a shovel. Blasting is accomplished by drilling 6-in. holes to a depth of 12 ft. with a vertical McCarthy auger drill made by the Salem Tool Company. Holes are spaced approximately 8 ft. apart and are loaded with 12½ lb. of Atlas powder. The blasting at this operation is one that has caused a great deal of concern for the Brunswick Cand & Gravel Company. The area is quite thickly populated around the operation, and the vibrations set up by blasts have caused complaints. By firing the holes singly, the management has succeeded in eliminating most of the vibration problems. There are buildings within 200 ft. of the blasting, and several attractive homes within 500 ft. of the pit.

A 1½-cu. yd. Lorain Model 75B shovel is used in the pit to load the blasted conglomerate. The material is hauled from the pit to the plant with International KB8F and L190 dump trucks. The pit trucks dump



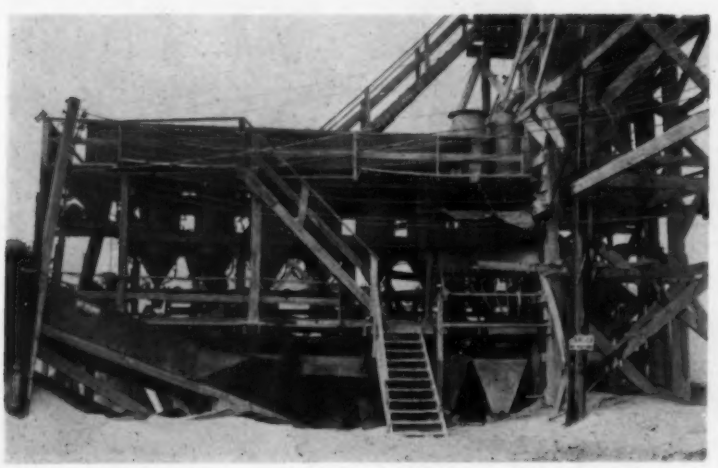
Above: The 6- by 14-ft. triple-deck inclined vibrating screen, showing wash water spraying the material coming from the impact reduction crusher above.

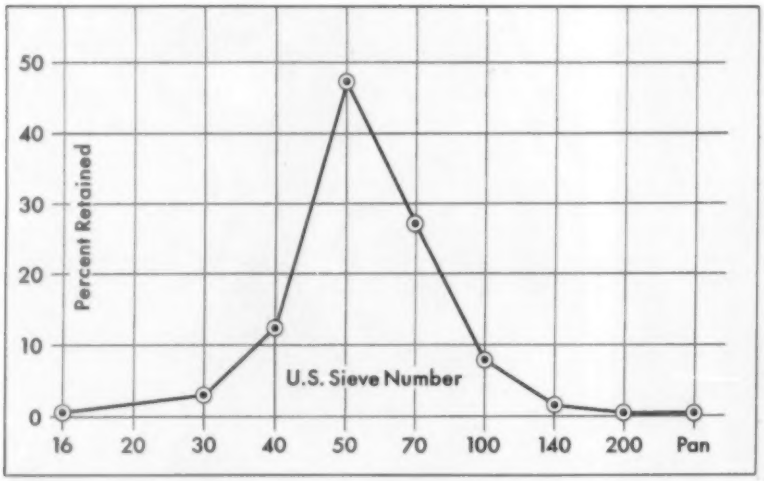
Above, right: The overflow above the multiple-spigot classifier, with triple-deck screen in background.

Right: A crane removing oversized boulders from the apron feeder over the primary crusher at the Brunswick plant.

Below: A side view of the plant and the 8-spigot classifier. Accumulator tanks feeding fines into one of the two screw dehydrators are shown in the foreground.

Below: right: Valves controlling the drawoff from the bottom of the classifier cells permit a measured and uniform discharge rate from each cell.





An average sieve analysis of fine sand stockpiled material.

onto a stationary horizontal grizzly having rails spaced approximately 24 in. apart. The material passes through this grizzly onto a 42-in. by 6-ft. Lippman heavy-duty apron feeder. The feeder discharges onto an inclined grizzly with 6-in. openings, and the oversize goes into a 25- by 40-in. Universal heavy-duty jaw crusher.

The minus 6-in. material then goes into a hopper which has a reciprocating feeder to move the material onto the 24-in. wide main sump belt. The discharge from the 25- by 40-in. grizzly crusher goes to this same belt and is carried to the scalping screen, a 4- by 10-ft. Simplicity double-deck inclined vibrator. The chunks of conglomerate that have not been blasted down so that they will pass the 24-in. grizzly openings are removed with a Northwest Model 25 crane and stored adjacent to the sump. The Simplicity double-deck vibrating screen has a 2-in. top deck and a 1⅛-in. lower deck. The plus 2-in. material goes into a 9- by 36-in. Wheeling jaw crusher for further reduction. The crusher product discharges to a rock return belt. Minus 2- plus 1⅛-in. material is chuted to the same rock return belt, which discharges onto a 4- by 6-ft. single-deck Bonded vibrator with 1-in. screen. The oversize from this screen goes to a conveyor, where it is stockpiled as road gravel. Clay and overburden chunks are also eliminated with this screen. The undersize goes to the main sump belt.

The minus 1⅛-in. material goes up a second main belt to the top of the plant, where it is fed into a 42-in. single cage Stedman disintegrator. This unit reduces some of the pieces of conglomerate that have not separated into sand and pebbles. It also breaks down some of the gravel.

All materials from the disintegrator are chuted to a 6- by 14-ft. Allis-Chalmers Ripl-Flo triple-deck inclined vibrating screen. The top-deck screen (with 1½-in. square openings) is used to reduce the load on the second and third decks. The middle deck consists of a ⅜-in. opening screen, and the bottom deck contains a 3/16-in. opening screen. Material retained on the ⅜-in. screen goes out to a stockpiling conveyor belt or to storage bins where trucks can be loaded from them. Minus ⅜- by 3/16-in. material goes on a stockpiling belt to make State No. 6 coarse aggregate.

Water is sprayed on all decks to assist in making the separation. A Fairbanks-Morse 6-in. centrifugal pump driven by a 150-hp. electric motor supplies the water for the plant. Settling ponds, which also store the water pumped out of the pit, supply the water. Although the water can be reused, the dewatering operation in the pit provides ample washing water.

The sand which passes the bottom deck of the Allis-Chalmers screen goes into the Concenco Super Sorter multiple-spigot classifier, made by the Deister Concentrator Company. This unit produces eight spigot discharges, each made up of special size ranges of the introduced sand. The Super Sorter allows the production of special sands as any combination or all of the spigot discharges can be put into one dewatering screw. The Super Sorter is very useful when an excess of one size-range of sand must be removed to produce the desired sand gradation.

Two 24-in. twin-screw Eagle classifiers dewater the sand. One of these units is ordinarily used to produce concrete sand and the other to produce a mason sand. Some special filter sands are produced at this plant by utilizing certain size ranges from the Super Sorter and saving them. When the sand varies in the pit, the Super Sorter controls not ordinarily found in sand and gravel plants; it has been a great help in making a uniform sand.

Part of the overflow from the Super Sorter is pumped to a 24-in. Cottrell Whirlcone separator. This

One of the two twin 24-in.-diameter washer - classifier - dehydrators. These units take the discharge from the hydraulic classifier to the left. The whirlcone separator is seen in the center of picture (rear).

ONE GREASE...ONE GUN CUTS INVENTORY...FROM 3 TO 1

Don't bother with 3 different greases — chassis, wheel bearing and water pump! Sinclair LITHOLINE® Multi-Purpose Grease does the job of all 3 . . . does away with the need for separate pieces of lubrication equipment.

Thanks to LITHOLINE, you use just one grease, one gun — cut inventory from 3 to 1. No danger of misapplication or contamination. You'll discover that LITHOLINE lengthens lube intervals, prolongs equipment life. It saves you time, trouble and money.

A Sinclair Lubrication Engineer will be glad to show you how Sinclair LITHOLINE Multi-Purpose Grease can help you get the most out of *your* equipment. Call your nearest Sinclair Representative, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, N. Y. 20, N. Y. *There's no obligation.*

SINCLAIR LITHOLINE®

MULTI-PURPOSE GREASE

equipment recovers the plus 100 minus 50-mesh material. The separator product goes to the concrete sand stockpiling conveyor belt.

The four primary products produced at this operation are: ¾- by ⅜-in. gravel; ⅜-in. by No. 4 gravel, concrete sand, and mason sand. All of these materials are run into stockpiles with inclined conveyor belts. It is then rehandled or loaded into trucks with a 2-cu. yd. Model L820 Lorain crane. A 20B Bucyrus Erie crane also assists in loading the materials out of stockpile. All of the materials produced at the Brunswick plant meet the state specifications for concrete aggregates.

Almost all of the material produced at the Brunswick plant is trucked north to the Cleveland area. The closest sand and gravel operations are approximately 20 miles south of the Brunswick plant; so higher prices can be obtained, thus partially offsetting the added stripping and blasting costs not often found in a sand and gravel operation.

The Brunswick Sand and Gravel Company is owned by E. W. Hallett of Crosby, Minn., who also operates the Central States Construction Company, the Hallett Construction Company, the United Construction Company, the Becker County Sand & Gravel Company, and others. J. F. Lorge of St. Peter, Minn., and R. N. McGiffert are officers of the company. John R. Howes Jr. is the manager, and George Ellis is plant superintendent.

Solway

(*From page* 103)

crushing plant on the surface. The workings are being developed on the pillar-and-stall system, leaving about 40 percent of the material behind to support the roof. The anhydrite contains about 95 percent calcium sulphate, and an average output of 350,000 tons a year is expected from the mine on a one-shift-per-day basis.

At the minehead the conveyors, the crushing and drying plant, the storage silos, the blending and feed plant, the kilns, the cement crusher and clinker store occupy a 40-acre site next to the Marchon Products chemical factory.

From the conveyor belt the large pieces of anhydrite are taken to the screening and crushing plant, the latter consisting of primary and secondary crushers which reduce the material to a final size of about ¾ in. The 175,000 tons a year of crushed anhydrite used at the plant is fed to the raw material silos; the rest is fed into rail hoppers for shipment.

About 30,000 tons a year of shale, quarried from the adjoining hillside, is also crushed and then—since it contains about 6 percent of water—dried before being stored in the shale silos. The 10,000 tons of coke breeze required annually, which arrives by rail, is also dried before storage since it contains about 20 percent of water. The whole handling, crushing and drying installation is operated from a single control panel.

The three raw materials are drawn from their storage silos by an electronically controlled weigh feeder onto a belt which feeds to a ball mill. Here the mixture is ground to a fine powder and pumped to the raw meal silos. At this point chemical analysis is carried out (and, if necessary, blending) to insure efficient firing in the kilns.

The two conventional rotary kilns at Whitehaven measure 230 ft. in length by 11 ft. 2 in. in diameter and are lined to withstand temperatures of up to 1,600 deg. C. In normal operation the gas leaving the cold end of each kiln contains about 9 percent sulphur dioxide; at the other end cement clinker is discharged at the rate of something like 140 tons a day. The whole output of cement is being bought by the Cement Marketing Company of Associated Portland Cement, on whose behalf it is packed into bags ready for distribution, mainly to the local market.

Completed by the Engineering Department of Marchon Products Limited as main contractors, the overall design of the Solway plant was supplied by Farbenfabriken Bayer A.G., Leverkusen. This firm placed at the disposal of Solway considerable theoretical and practical experience gained over many years of operating anhydrite plants based on the "Müller-Kühne" process. Solway thus had the benefit of the advice and assistance of Dr. H. H. Kühne, one of the originators of the process.

• Congressman George H. Fallon of Baltimore, Md., originator of the National Road Building Program, has received the annual citation for outstanding service in the cause of traffic safety at the Fifth Annual Commissioners' and Governors' Conference on Metropolitan Washington Traffic Problems. Left to right are Burton F. Miller, deputy executive vice-president of A.R.B.A.; Congressman Fallon; and John N. Robertson, national president of A.R.B.A.

Lime, Clay Used to Provide Inexpensive Road Surfacing

Successful results of an experiment conducted at Tegucigalpa, Honduras, by the consulting firm of Arthur D. Little & Company, Cambridge, Mass., points the way to an inexpensive method of surfacing roads in areas where lime and clay are readily available. The experiment was conducted at the request of the Honduras government.

In a quarter mile stretch of highway which leads from Tegucigalpa to the Valle de Angeles, technicians experimented with a road surfacing mixture of lime and clay, under controlled conditions. It is believed that lime dissolved in water surround the clay particles which are in colloidal suspension, thus binding the whole mass in a cementation action. The method is already being used in Texas, Illinois, and other states.

The experimental section was observed closely for some time, and despite the prevailing rainy season it remained in excellent condition, necessitating no asphalt surfacing.

Calaveras Cement Co. Buys Gravel, Transit-Mix Firms

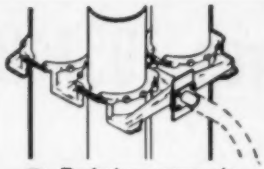
Calaveras Cement Company, San Francisco, Calif., has purchased a majority of the stock in five transit-mix and gravel companies in California's Central Valley.

The companies are the Standard Materials Company, Inc., Modesto; River Rock, Inc., and the Concrete Supply Company, Inc., both of Merced; Merced Sand and Gravel, Inc., Atwater; and the Standard Rock Company, Inc., Escalon.

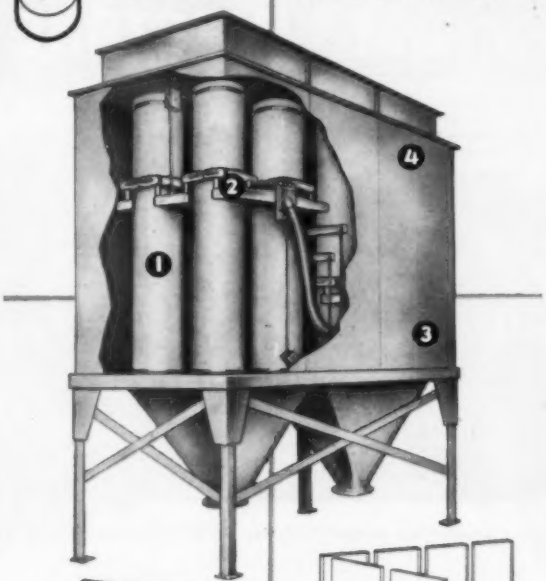
No important changes in sales, personnel, suppliers, or policy are contemplated as a result of the $500,000 transaction.

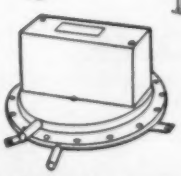
The Wissota Sand & Gravel Company, Eau Claire, Wis., has started operations at its first Minnesota plant, located just outside of Winona. The firm has seven other plants, all located in Wisconsin.

1 Uniformly dense felt filter bags... of wool or synthetics...produce maximum filtering efficiency yet have 6 times flow rate of ordinary woven filter material. Tiny pores catch and hold even sub-micron-sized particles. Bags measure 12″ in diameter... up to 18′ in length.



2 Exclusive reverse-air-jet action cleans entire bag area uniformly and automatically. Blow rings* travel up and down length of bag exterior . . . blowing through bag to remove accumulated dust from bag walls. Automatic cleaning never interrupts peak filtering efficiency.





3 Automatic pressure switch* eliminates overcleaning . . . prolongs bag life. Switch controls blow ring operation. Above normal pressure loss actuates rings which stop when pressure loss normalizes. Automatic self-cleaning occurs as often or as seldom as needed.

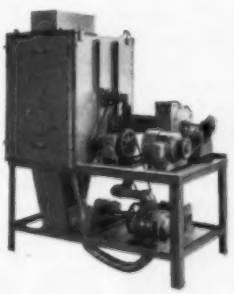
4 Prefabricated Aeroturn can be installed in one-quarter the time required by ordinary dust collectors of similar capacity . . . in half the space. Aeroturn arrives from the factory in easy-to-assemble prefabricated sections.

50% LOWER MAINTENANCE COSTS and 99.9%+ EFFICIENCY

with KOPPERS Series 12 Aeroturn Dust Collectors

Up To 75% Lower Installation Costs . . . Up to 50% Less Space! You can get rid of dollar-consuming dust far more economically with a Koppers Series 12 Aeroturn than with a conventional collector. The Aeroturn Dust Collector costs you less to install and maintain . . . occupies far less space. A Koppers Series 12 Aeroturn operates continuously and automatically at highest filtering efficiency.

Aeroturn's remarkably high filtering efficiency sends your plant and machinery maintenance costs way down. Your heating and cooling costs fall because you can recirculate air . . . cleaner than outside air. Koppers Series 12 Aeroturn Dust Collector is available with from 4 to 64 filter bags . . . Aeroturn's capacities range from 1,000 to 60,000 CFM. It only takes a few minutes of your time to discover for yourself the many cost-saving features of the Koppers Series 12 Aeroturn.



Factory-assembled and test-operated, Koppers Model D Aeroturn Dust Collector combines features of Series 12 with unusual compactness. Capacities range from 500 to 4,800 CFM.

AEROTURN DUST COLLECTORS

KOPPERS®

Koppers Company, Inc.
Metal Products Division
Industrial Gas Cleaning Dept.

***Engineered* Products**
Sold with *Service*

**Hersey Patents*

Mail this coupon today!

KOPPERS COMPANY, INC., Industrial Gas Cleaning Dept., 4512 Scott Street, Baltimore 3, Maryland.

Gentlemen: Please send me a free copy of your Aeroturn Booklet with descriptions, drawings and photographs. ☐ Series 12 ☐ Model D

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

Iowa Aglime Assn. Prepares 1957 Billboard Ads

IN 1949 the Iowa Agricultural Limestone Association, Inc., under the leadership of Clint A. Allen, executive secretary, initiated a billboard advertising program to publicize the need for agricultural lime in the soils of the United States. With each year's campaign, this method of advertising proved more and more effective in winning farmer co-operation and increasing sales.

On January 1 the Iowa Agricultural Limestone Association will inaugurate its eighth year of billboard advertising when the first of the 1957 series of six posters is displayed along highways throughout Iowa and neighboring states.

Every year a new series of six posters is prepared by the association and made available to limestone producers in Iowa and other states. Four 1957 posters are shown here. Each poster features a different design related to the farming cycle and is displayed for a 60-day period on 12- by 25-ft. billboards. At the bottom of each poster, the name of the participating producer is printed.

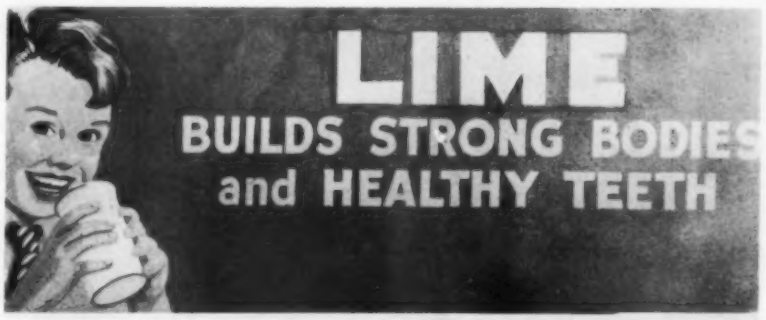
During 1956, 248 of these billboard posters appeared on Iowa's highways. In four surrounding states 46 billboard posters told the story of agricultural lime. It is anticipated that in 1957 over 60 posters will be used in states other than Iowa.

Those interested in using this form of promotion may obtain full information and contract forms by writing to Clint A. Allen, Iowa Agricultural Limestone Association, Inc., 401 Teachout Bldg., Des Moines, Iowa. Before filling out and returning the contract it is advisable to establish the availability of billboard space and location. Since poster No. 1 (January and February) goes to press on December 15, only the five remaining posters may be obtained by those ordering at this time.

The association's advertising program provides an easy and economical way for producers of limestone to keep their product and their name before the public. The actual cost of this type of advertising is less than $1 per day.

After ordering posters and making arrangements for billboard rental space and servicing, a producer has no more concern. Every 60 days the association will ship the next poster direct to the designated billboard company for posting.

Agricultural limestone is the best fertilizer, according to Poster No. 2 (March and April).

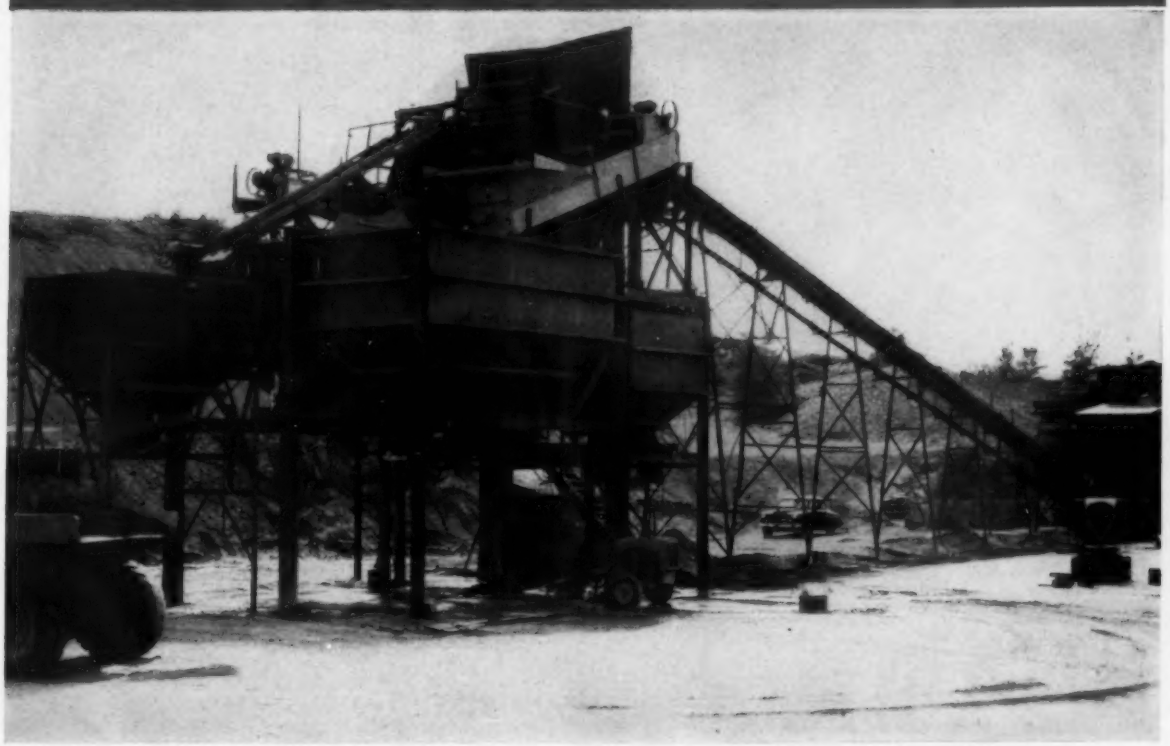


Nutritional benefits of liming pastures are stressed in Poster No. 4 (July and August).

Healthier, heavier cattle are produced on grassland fertilized with agstone. (Poster No. 5).

Poster No. 6, to be used in November and December, displays a Christmas message.

ANOTHER DIFFICULT SCREENING JOB MADE EASY WITH SECO SCREENS



Photographed on-the-job Gowanda, New York

OPERATOR PRODUCES 50,000 T./YEAR OF FILTER BED SAND TO RIGID SPECIFICATIONS OF ERIE COUNTY, N. Y. HEALTH DEPT.

Pictured above is the main portion of the sand and gravel plant of Ray Vogtli & Sons, Inc. of Gowanda, N. Y. This company has been fortunate enough to have received, for the past three years, an annual contract for 50,000 tons per year of filter bed sand from the Erie County, N. Y. Health Department.

The Health Department has set rigid standards as to size, uniformity and removal of fines. Samples are checked periodically to make sure these standards are met.

This company's good fortune in having secured these important contracts has been due, in large measure, to the consistently accurate screening results they have obtained from their two SECO VIBRATING SCREENS. A 4 x 10 double-deck scalper separates the sand from coarse stone and a 3 x 10 triple-deck gives them their finished products.

To quote Mr. Lee Vogtli, head of Ray Vogtli & Sons, Inc.: "We have had SECO SCREENS since we opened our new plant 10 years ago, and have found them very dependable and trouble-free. You can rest assured, when we need additional screens, they'll be SECO'S too."

SEND FOR SECO CATALOG No. 204

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

REMEMBER . . . SECO SHIPS PARTS THE SAME DAY ORDERED

Keep this plus service in mind when you're ordering screens for your plant. When spare parts are needed, you'll have them ready for installation with a minimum loss of production time. This is one of the many reasons why more and more operators from coast to coast are turning to SECO to make their operations more efficient, more profitable.

SCREEN EQUIPMENT CO., INC.

Buffalo 25, N. Y.

Tried one, bought five...

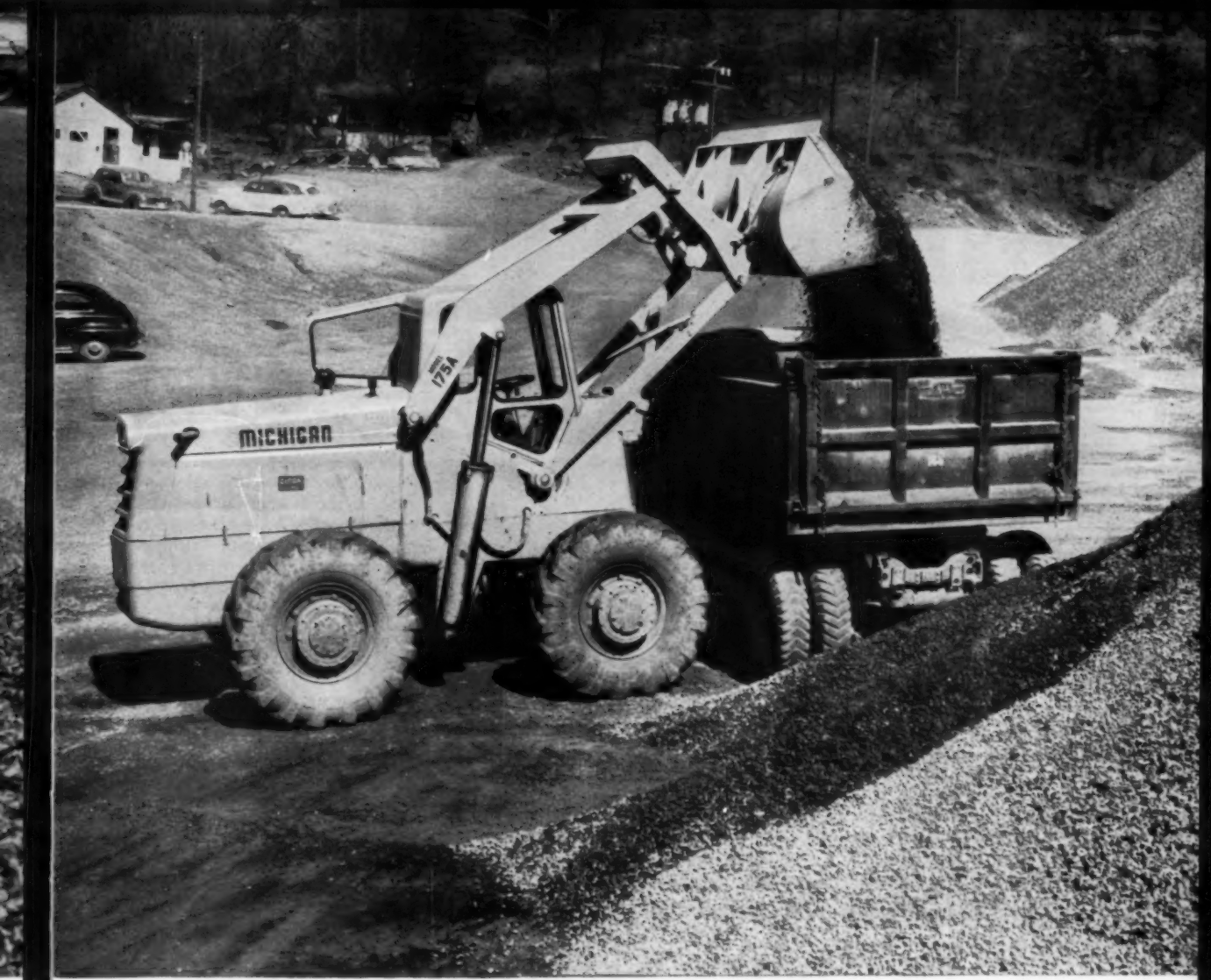
Lambert Brothers quarries report Michigan Model 175A "Well worth your test"

Next time you're in the market for a Tractor Shovel, we'd like permission to demonstrate a Michigan *at our expense* in your pit. We think the results will convince you that Michigan is your "best buy" . . . just like it convinced Lambert Brothers, Knoxville, Tennessee, one of whose *five Michigans* is shown above.

Lambert, one of the largest crushed stone producers in the country, used to load trucks at five of their Tennessee and Georgia quarries with crawler-shovels and portable conveyors. As road work increased demands for their ¼" to 2½" stone, these methods became too slow . . . and, as labor costs soared, too expensive. Partner Walter Lambert and his Knoxville quarry superintendent, Lawson Tice, carefully studied all the newest methods . . . then called for a Tractor Shovel demonstration. Michigan won, hands down! A 2¼ yard Model 175A outproduced the *next best* loader, 2½-to-1! Its efficient power train and smooth-operating bucket heaped loose stockpiled stone in one quick pass . . . the other machines had to work in and out several times to get a similar load.

Loads 100 tons hourly

That happened about a year ago. Today, Lambert has *five* Michigans. These handle all truck-loading at company-affiliated quarries in Knoxville, Nashville, Rockwood and Maryville, Tennessee, and in Kennesaw, Georgia. Their Knoxville unit, pictured here, averages 800 tons per 8-hour day. Its 27 mph speed hustles it 450 ft or more between the nine stockpiles as needed . . . also enables it to quickly handle such rush "odd jobs" as cleaning spill-



age from the hopper and towing the air compressor.

If this kind of high-speed cost-cutting looks like it can help you, may we suggest you re-analyze your needs soon! And when you do, take it from Mr. Lambert: "We tried 'em all," he says, "and we *know* that Michigan Tractor Shovels are best for quarries!" There's a size and drive to fit your needs . . . 1 to 2¼ cubic yards.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 31, Michigan
Michigan is a registered trade mark of

CLARK® EQUIPMENT

To load 5 or 6 yard truck with 10 tons of stone takes the Michigan 175A only 3 passes. For loading sideboarded 16 to 18 yard 25 ton trucks, Michigan's 11 foot dumping height is especially valuable.

"The best Tractor Shovel I ever drove," says Operator Jim Pitts of the Michigan. "I like its non-stop no-clutch shift, the automatic bucket tip-back, and the ease with which it digs out the stone."

Yes, an OWEN BUCKET swung from any crane boom will always give you:

FASTER Penetrating ACTION
when handling aggregate and loose materials;

FASTER Digging ACTION
with variable, multiplied closing power for excavation;

FASTER Loading ACTION
by reason of correctly engineered bowl designs with balanced power on each jaw;

FASTER Discharge ACTION
The combination of adjustable reeving and weight concentration in area surrounding lower sheave block exerting a direct pull on the cable, results in quicker opening and faster dumping.

"A mouthful at every bite"
BUCKETS AND GRAPPLES
Write for Catalog
THE OWEN BUCKET CO.
6050 Breakwater Avenue • Cleveland, Ohio
Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.

Obituaries

STUART L. GARDINER, secretary-treasurer of the National Stone Company, Joliet, Ill., for the last 40 years, died recently at the age of 69. Several years ago Mr. Gardiner established a foundation at the Seeing Eye Institute for aiding persons with visual handicaps.

CHARLES SULLIVAN, 67, sales supervisor for the Fischer Lime & Cement Company, died recently in a Memphis, Tenn., hospital after a brief illness.

DONALD JOEL DAVISON, 54, division treasurer of the Lone Star Cement Company, died unexpectedly after a heart attack on October 22 at his home in Indianapolis, Ind. Mr. Davison had been with the company for more than 30 years, and was a member of the Lone Star 25-Year Club.

JOHN F. KEEFNER, owner of the Keefner Sand & Gravel Company, Des Moines, Iowa, died at the age of 88. Mr. Keefner is said to have founded the first ready-mix concrete firm west of the Mississippi River.

JOHN MOORS ALLEN, chairman of the board of the Erie Sand and Gravel Company, Erie, Pa., died recently. Mr. Allen was 56 years old.

EDWARD S. GUBERNATOR, retired general traffic manager of the Lehigh Portland Cement Company, died recently in Allentown, Pa., at the age of 78. Mr. Gubernator joined Lehigh in 1927, serving as traffic manager in Chicago. In 1937 he went to Allentown as general traffic manager. He retired in 1948.

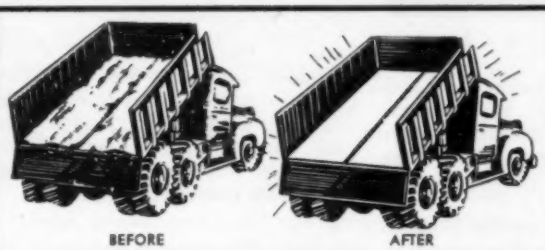
CLEMENT J. PIERSON, 55, president of the Pierson Brothers Sand Company, Milwaukee, Wis., died in a local hospital on September 27 of a heart attack. He had been hospitalized since an attack suffered while returning from a trip to California last August.

DREDGE SLEEVE CLAMPS

Sturdy • Practical • Dependable • Economical

Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply... positive in action. Write for illustrated folder, today.

THE BLACK BROTHERS CO., INC.
9th Ave. at 4th, Mendota, Illinois



BEFORE AFTER

ADMIRO HEAT TREATED ALLOY STEEL

CUTS MAINTENANCE COSTS

Specify Admiro Heat Treated High Tensile Alloy Steel as your best defense against severe abrasion and heavy impact. Lengthens machine service life, reduces down-time, lowers repair and maintenance costs. Available in bars and plates.

COMPLETE FABRICATING FACILITIES
Welding—Rolling—Forming
Intricate Shapes Cut to Specification

Recommended Applications:
Relining and repairing truck beds, crushers, chutes, hoppers, bins, wear liner plates, buckets, core liners, dirt and rock recovery equipment. Special uses in Mining, Quarrying, Cement and Aggregate Plants.

Write for Bulletin

ADMIRAL
ALLOY STEEL CORP.
850 Euclid Ave., Cleveland, Ohio

Keep Tramp Metal Out of Your Crushers

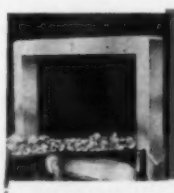
Protect Profits with the RCA Metal Detector

Installed around your conveyor, the RCA Electronic Metal Detector readily detects those villains that break off and eat up profits in downtime—manganese steel dipper teeth (which no magnet can dislodge), drill bits, tool steel parts.

PREVENTS TROUBLE—The Electronic Detector is on the job, every moment of the time, probing out tramp metal, both magnetic and non-magnetic. Wired to sound an alarm, spray-mark metal area, or stop a conveyor when trouble threatens, it prevents tough metal fragments from causing damage to the crushers later on.

No more burning out wedged tramp metal or replacing shafts damaged by stray metal parts. With the RCA Metal Detector in operation, these threats to production can be eliminated.

PAYS FOR ITSELF—By reducing downtime and production losses, and saving high-cost machinery replacements, the RCA Metal Detector protects profits and quickly pays for itself!



MARK OF RCA QUALITY
ELECTRONIC
METAL DETECTOR

RADIO CORPORATION of AMERICA
Dept. M-236, Building 15-1, Camden, N. J.
In Canada: RCA VICTOR Company Limited, Montreal

☐ Please send me complete information on RCA Metal Detector for use in quarrying and mining.
☐ Have RCA field representative contact me.

NAME_____ TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

Industry Personalities

J. K. Stewart

JOHN KENNETH STEWART has been appointed general manager of the Ruberoid Company's gypsum mine and plant at Wheatland, N. Y., according to an announcement released by W. J. Van Akin, vice-president, manufacturing.

Before assuming this position, Mr. Stewart was senior mining engineer at Ruberoid's asbestos mine at Hyde Park, Vt., where he had worked in exploration and plant engineering since 1951.

H. P. Eells Jr., president of Basic Incorporated, has announced the appointment of WALTER B. W. WILSON as assistant treasurer of the company.

Mr. Wilson was formerly with the New York Stock Exchange as assistant to the president, and later as a representative of the stock list department.

JAMES M. LOPEZ has been named sales representative of the Marquette Cement Manufacturing Company, Chicago, Ill. Mr. Lopez will handle the metropolitan St. Louis, Mo., market.

DEFOREST S. COLBURN, executive vice-president of the Marquette Cement Manufacturing Company, retired, was recently named the recipient of the Lake Forest College 1956 award for distinguished service. Mr. Colburn, a Lake Forest College alumnus and a former trustee and alumni board president, joined Marquette in 1924.

ROBERT O. BEMIS has been named manager of the Agricultural Sales Division of Basic Incorporated.

Mr. Bemis joined Basic in 1942, as secretary to the president of Basic Magnesium, Inc., becoming office manager of Basic Refractories, Inc., in 1943. In 1950 he was made assistant to the manager of operations, and in 1953 assistant to the manager of the Agricultural Division.

Mr. Bemis replaces JAMES EELLS, who has retired.

A graduate of Shaw High School and Adelbert College of Western Reserve University, Mr. Bemis resides at 4082 Princeton Ave, South Euclid, Ohio.

B. J. STEGER, auditor, The France Stone Company, has been elected president of the Toledo Control of the Controllers Institute of America.

At the annual meeting of the organization's San Francisco Control, MERRILL J. FERREE, treasurer and controller, Granite Rock Company, Watsonville, Calif., was named a director.

One of the new directors of the local controllers' group in Seattle is KENNETH A. STOTLER, secretary-treasurer, Pioneer Sand & Gravel Company.

E. J. Bonkoff

EMIL J. BONKOFF has joined the firm of Larry F. Labow, consulting mining engineer, Toronto, Canada. In his former position with the Department of Trade and Commerce at Ottawa Mr. Bonkoff was responsible for the development and promotion of trade in industrial minerals and products for Canadian and foreign industries. He had also done geological field work for several mining concerns.

In his new post with the Toronto firm Mr. Bonkoff will continue to specialize in the field of industrial minerals.

KENT JANDER, who was recently on the staff of the National Lime Association as chemical engineer, is now associated with the American Oil Company (Destrehan Refinery) at New Orleans, La. His duties will be in the engineering department.

The appointment of WILLIAM W. BURNHAM as assistant sales manager of the Philadelphia sales territory of the Universal Atlas Cement Company, New York, N. Y., was announced recently.

Mr. Burnham joined the cement company's Des Moines sales office as a sales trainee in 1948. Later he was transferred to the Kansas City sales office, serving there until 1952. After that time he was assigned to the Dayton sales office, his most recent post.

The appointment of JAMES R. CASEY as supervisor of contractor salesmen for Calaveras Cement Company has been announced by Mel J. London, vice-president in charge of marketing.

Mr. Casey, who will continue to make his headquarters in San Francisco, was formerly sales engineer. He became a San Francisco sales representative for Calaveras in 1932, and later was assigned to management duties at the company's San Andreas plant.

A. L. SUNDELL and AL MAIER were honored recently by officials of the Calaveras Cement Company upon the occasion of their retirement from their duties. Mr. Sundell had been with Calaveras since 1935, serving as north coast sales representative. Mr. Maier joined the firm in 1934 as a salesman in the San Jose territory, transferring to Oakland in 1941.

Calaveras will be represented by JACK GORDON and SHERMAN R. LOCKE in the East Bay territory and by JACK L. GARVEY and WILLIAM J. GRAY in the north coast area.

ALLAN W. FLANDRO, chief engineer of the Utah Sand & Gravel Products Company, Salt Lake City, has been named to the newly-created post of manager. Mr. Flandro joined the firm in 1952, having been engaged in construction work in Salt Lake City prior to this position.

CRIS DOBBINS, president of the Ideal Cement Company, Denver, Colo., was given the first member award for outstanding achievement by Alpha Kappa Psi, business and professional fraternity.

R. H. B. SMITH, vice-president of the Dragon Cement Company, New York, N. Y., served as chairman of the 1956 fund-raising campaign of the General Contractors Division of Travelers Aid Society of New York. Travelers Aid, a private, non-profit organization dedicated to the protection and care of distressed travelers, is supported entirely by voluntary gifts.

ROY W. KEELEY was named a vice-president and general sales manager of International Division of the Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Here's MORE efficient driver speed for HEAVY Loads

ALLIS-CHALMERS TEFC Wound-Rotor MOTORS

Where high inertia loads must be accelerated quickly and smoothly — yet power supply is limited — the Allis-Chalmers wound-rotor motor proves its efficiency . . .

High starting torque with this motor requires relatively low line-current. In addition, adjustable acceleration and running speed are possible through use of simple controls.

Other features of the TEFC wound-rotor motor include:

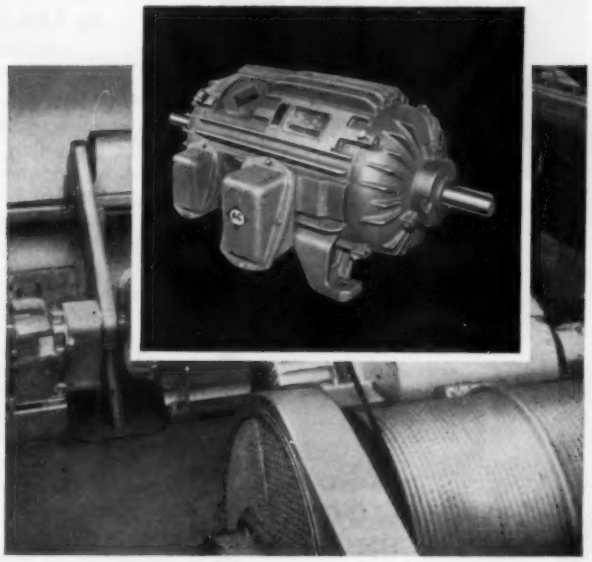
1. Rib construction provides ample cooling surface.

2. Single enclosure surrounds stator, rotor, slip rings, brushes and brush rigging. Gives maximum protection in moist, dirty, corrosive or hazardous atmosphere.

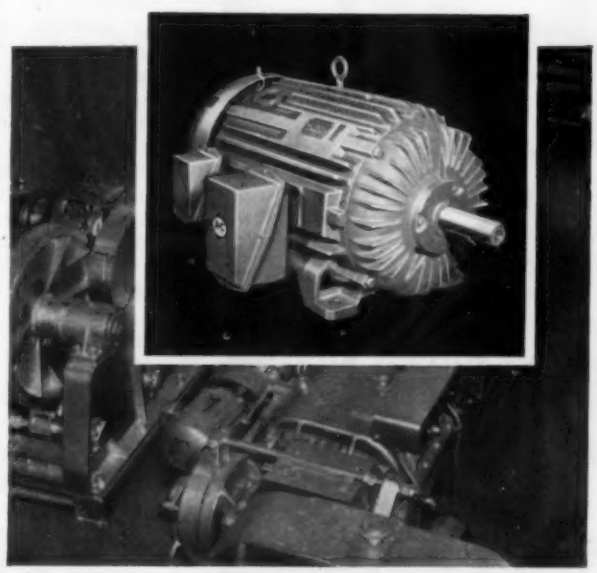
3. Cast-iron frame contributes rigid, distortion-free bearing support and keeps alignment true.

4. Easy access to collector rings and brushes permits on-the-spot inspection of brushes and commutators.

If you use hoists, lifts, cranes, conveyors, crushers or mills, find out more about the "MORE" in Allis-Chalmers wound-rotor motors. A-C motors also are available in various open types. Contact your nearby A-C sales office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.



For intermittent duty, this totally-enclosed, non-ventilated model is available in frame sizes 284 to 505 inclusive. Above 505 frame, Allis-Chalmers offers its famous tube-type motor.



For continuous service, this tough, fan-cooled model is ideal. All enclosed motors can be furnished in standard enclosed or explosion-proof construction rated 55 C rise.

A-5180

ALLIS-CHALMERS

Industry Personalities

J. K. Stewart

JOHN KENNETH STEWART has been appointed general manager of the Ruberoid Company's gypsum mine and plant at Wheatland, N. Y., according to an announcement released by W. J. Van Akin, vice-president, manufacturing.

Before assuming this position, Mr. Stewart was senior mining engineer at Ruberoid's asbestos mine at Hyde Park, Vt., where he had worked in exploration and plant engineering since 1951.

H. P. Eells Jr., president of Basic Incorporated, has announced the appointment of WALTER B. W. WILSON as assistant treasurer of the company.

Mr. Wilson was formerly with the New York Stock Exchange as assistant to the president, and later as a representative of the stock list department.

JAMES M. LOPEZ has been named sales representative of the Marquette Cement Manufacturing Company, Chicago, Ill. Mr. Lopez will handle the metropolitan St. Louis, Mo., market.

DEFOREST S. COLBURN, executive vice-president of the Marquette Cement Manufacturing Company, retired, was recently named the recipient of the Lake Forest College 1956 award for distinguished service. Mr. Colburn, a Lake Forest College alumnus and a former trustee and alumni board president, joined Marquette in 1924.

ROBERT O. BEMIS has been named manager of the Agricultural Sales Division of Basic Incorporated.

Mr. Bemis joined Basic in 1942, as secretary to the president of Basic Magnesium, Inc., becoming office manager of Basic Refractories, Inc., in 1943. In 1950 he was made assistant to the manager of operations, and in 1953 assistant to the manager of the Agricultural Division.

Mr. Bemis replaces JAMES EELLS, who has retired.

A graduate of Shaw High School and Adelbert College of Western Reserve University, Mr. Bemis resides at 4082 Princeton Ave, South Euclid, Ohio.

B. J. STEGER, auditor, The France Stone Company, has been elected president of the Toledo Control of the Controllers Institute of America.

At the annual meeting of the organization's San Francisco Control, MERRILL J. FERREE, treasurer and controller, Granite Rock Company, Watsonville, Calif., was named a director.

One of the new directors of the local controllers' group in Seattle is KENNETH A. STOTLER, secretary-treasurer, Pioneer Sand & Gravel Company.

E. J. Bonkoff

EMIL J. BONKOFF has joined the firm of Larry F. Labow, consulting mining engineer, Toronto, Canada. In his former position with the Department of Trade and Commerce at Ottawa Mr. Bonkoff was responsible for the development and promotion of trade in industrial minerals and products for Canadian and foreign industries. He had also done geological field work for several mining concerns.

In his new post with the Toronto firm Mr. Bonkoff will continue to specialize in the field of industrial minerals.

KENT JANDER, who was recently on the staff of the National Lime Association as chemical engineer, is now associated with the American Oil Company (Destrehan Refinery) at New Orleans, La. His duties will be in the engineering department.

The appointment of WILLIAM W. BURNHAM as assistant sales manager of the Philadelphia sales territory of the Universal Atlas Cement Company, New York, N. Y., was announced recently.

Mr. Burnham joined the cement company's Des Moines sales office as a sales trainee in 1948. Later he was transferred to the Kansas City sales office, serving there until 1952. After that time he was assigned to the Dayton sales office, his most recent post.

The appointment of JAMES R. CASEY as supervisor of contractor salesmen for Calaveras Cement Company has been announced by Mel J. London, vice-president in charge of marketing.

Mr. Casey, who will continue to make his headquarters in San Francisco, was formerly sales engineer. He became a San Francisco sales representative for Calaveras in 1932, and later was assigned to management duties at the company's San Andreas plant.

A. L. SUNDELL and AL MAIER were honored recently by officials of the Calaveras Cement Company upon the occasion of their retirement from their duties. Mr. Sundell had been with Calaveras since 1935, serving as north coast sales representative. Mr. Maier joined the firm in 1934 as a salesman in the San Jose territory, transferring to Oakland in 1941.

Calaveras will be represented by JACK GORDON and SHERMAN R. LOCKE in the East Bay territory and by JACK L. GARVEY and WILLIAM J. GRAY in the north coast area.

ALLAN W. FLANDRO, chief engineer of the Utah Sand & Gravel Products Company, Salt Lake City, has been named to the newly-created post of manager. Mr. Flandro joined the firm in 1952, having been engaged in construction work in Salt Lake City prior to this position.

CRIS DOBBINS, president of the Ideal Cement Company, Denver, Colo., was given the first member award for outstanding achievement by Alpha Kappa Psi, business and professional fraternity.

R. H. B. SMITH, vice-president of the Dragon Cement Company, New York, N. Y., served as chairman of the 1956 fund-raising campaign of the General Contractors Division of Travelers Aid Society of New York. Travelers Aid, a private, non-profit organization dedicated to the protection and care of distressed travelers, is supported entirely by voluntary gifts.

ROY W. KEELEY was named a vice-president and general sales manager of International Division of the Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Here's MORE efficient driver speed for HEAVY Loads

ALLIS-CHALMERS TEFC Wound-Rotor MOTORS

Where high inertia loads must be accelerated quickly and smoothly — yet power supply is limited — the Allis-Chalmers wound-rotor motor proves its efficiency . . .

High starting torque with this motor requires relatively low line-current. In addition, adjustable acceleration and running speed are possible through use of simple controls.

Other features of the TEFC wound-rotor motor include:

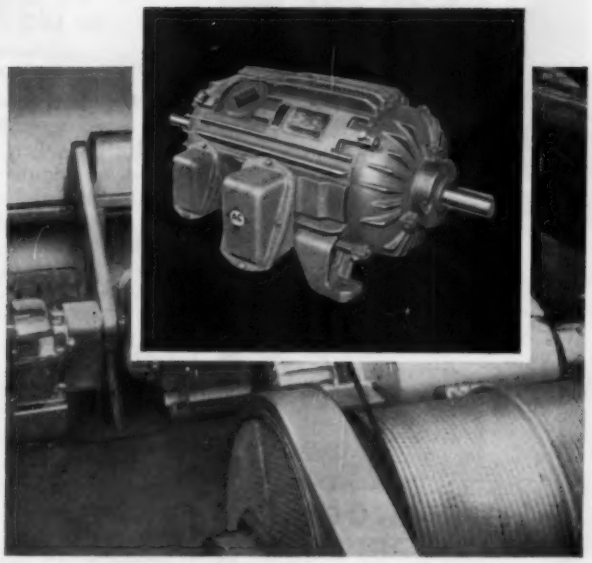
1. Rib construction provides ample cooling surface.

2. Single enclosure surrounds stator, rotor, slip rings, brushes and brush rigging. Gives maximum protection in moist, dirty, corrosive or hazardous atmosphere.

3. Cast-iron frame contributes rigid, distortion-free bearing support and keeps alignment true.

4. Easy access to collector rings and brushes permits on-the-spot inspection of brushes and commutators.

If you use hoists, lifts, cranes, conveyors, crushers or mills, find out more about the "MORE" in Allis-Chalmers wound-rotor motors. A-C motors also are available in various open types. Contact your nearby A-C sales office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.



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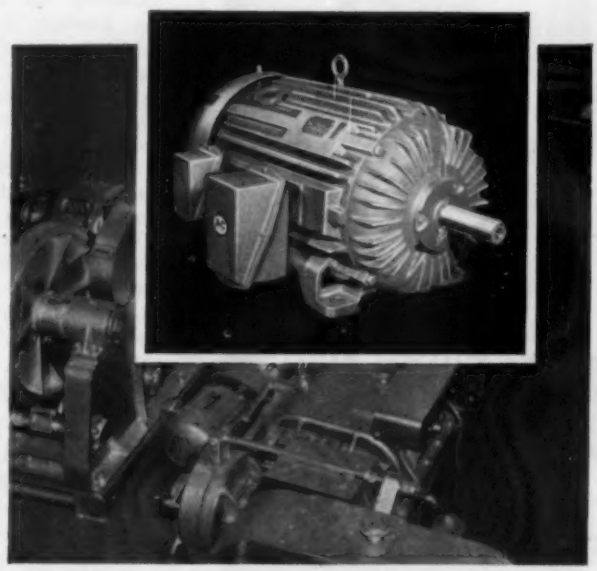


For continuous service, this tough, fan-cooled model is ideal. All enclosed motors can be furnished in standard enclosed or explosion-proof construction rated 55 C rise.

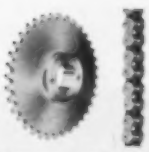
A-5180

ALLIS-CHALMERS

DODGE PRODUCTS
You Should Know-

DODGE-TIMKEN
PILLOW BLOCKS

TAPER-LOCK
ALL STEEL
CONVEYOR PULLEYS



TAPER-LOCK
SPROCKETS AND
DODGE ROLLER CHAIN

Dodge Bulletins you should have-

- Rolling Bearings. Load ratings, dimensions and other data on Dodge-Timken Roller Bearings and SC and SCM Ball Bearings. Bulletin A-638A.
- Taper-Lock All Steel Conveyor Pulleys. Construction details, sizes, dimensions. Bulletin D56.
- Taper-Lock Sprockets, Taper-Lock Chain Couplings, Dodge Roller Chain. Technical information. Selection, installation, maintenance data. Bulletin A-644.

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4000 Union Street • Mishawaka, Indiana

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

How to Lower Law Suit Expenses

At a convention attended by manufacturers, sellers, buyers, and processors of non-metallic products this legal question was presented by several of the convention members: "What is the legal difference between compensation and damages to injured employees, and what are the liabilities of employers?"

After reviewing numerous late and leading higher court decisions I have formulated a concise and dependable rule: an employee may recover *compensation under the State Workmen's Compensation Act* for injuries and diseases he sustained while performing his regular duties and within the scope of his employment. In other words, in order to recover compensation the employee need not prove that he used "ordinary care" to avoid the injury or that he was not negligent.

However, no employee can recover *damages from his employer* unless he proves that the injury resulted from the employer's negligence or lack of ordinary care. This is so because the state compensation laws are primarily intended to compensate employees for injuries and sickness sustained while the employee is working within the scope of his employment, whereas employees cannot recover damages for an injury unless the testimony proves that the employer was negligent in some manner.

All employers should know the exact circumstances under which an injured employee can sue him for damages, instead of accepting compensation specified by the State Workmen's Compensation Act, because generally a jury will award to an injured employee an amount far in excess of compensation specified by the State Workmen's Compensation Act. Also, an Industrial Board of a state may make or fix relatively low hospital fees for services rendered employees under the State Workmen's Compensation Act.

For instance, in *Idaho Hospital Association v. Board,* 277 Pac. (2d) 287, it was shown that a state statute gave the Industrial Accident Board authority to regulate fees for hospital services for injured employees, within the scope of the State Workmen's Compensation Act. The Board fixed hospital charges for accidents incurred by injured employees considerably lower than those ordinarily charged for other patients for similar services. The State Hospital Association, which comprises members of numerous hospitals in the state, appealed to the higher court on the plea that the hospital rates fixed by the Board are unreasonably low. Nevertheless, the higher court upheld the Board, saying:

"We do not say any fees or charges fixed by the Board would necessarily be reasonable, but from the record before us, after carefully considering all the arguments in the briefs and orally of the respective parties we cannot say the Board has not regularly pursued its lawful authority."

This court went on to explain that the Board is the administrative agency having overall supervision and activation of workmen's compensation under the statute, and by reason of its hearings throughout the State, its knowledge of the care and treatment required by injured workmen, and the facilities for treatment available in the respective hospitals of the state the Board is placed in a strategic position to adjudge what are reasonable hospital fees and charges. Of course, the Board also prescribes fees for surgeons and physicians.

Can Cancel Lease

A reader asked this question: "If a lease contract does not include the amount of land the lessee believes he is leasing, what are the legal rights of the parties?"

A few weeks ago a higher court answered this question. For example, in *Inland Company v. Cement Co.* 272 Pac. (2d) 620, the testimony showed these facts: The Inland Company owned a 5.3-acre tract of land upon which there were bunkers for sorting sand and gravel. Contiguous thereto were tracts of land with commercial quantities of sand and gravel, owned by the Ross Company. The Valley Cement Company negotiated with the Inland

A.R.B.A. ROAD SHOW AND CONVENTION

What you'll hear there!

THE ARBA CONVENTION

will open Monday morning, January 28, 1957, with suitable ceremonies. For five days you will have the opportunity of attending the greatest seminar on roads and road construction ever gathered together. Every effort has been made to secure people of importance and authority to talk to you on the critical subjects of the industry.

You will hear:

- Senator Albert Gore of Tennessee
  Chairman of the Senate Sub-Committee on Roads
- Senator Dennis Chavez of New Mexico
  Chairman of the Senate Committee on Public Works
- Rep. George H. Fallon of Maryland
  Author of the Highway Bill and
  Chairman of the House Sub-Committee on Roads
- Senator Francis Case of South Dakota
  Ranking minority member of the
  Senate Sub-Committee on Roads
- Rep. Charles Buckley of New York
  Chairman of the House Sub-Committee on Public Works
- Rep. J. Harry McGregor of Ohio
  Ranking minority member of the
  House Sub-Committeee on Roads

—and many other well-known authorities on the Road situation. These men have played a great part in the formation of the coming road program. No group knows the subject better.

Technical Sessions will begin Monday at 1:30 P.M. and *You will hear:*

- W. A. Warrick, Consulting Engineer of the John Clarkson Co. of Albany, N. Y.; and K. B. Woods, Head of the School of Civil Engineering, Purdue University. They are outstanding authorities on "The Design of Rigid Type Pavements."
- Fred F. Florence, President of the American Bankers Association (Republic National Bank of Dallas, Texas) will speak on "The Bankers' Part in the Accelerated Federal Aid Road Program."
- A. E. Johnson, Executive Secretary, American Assn. of State Highway Officials, Washington, D.C., talking on "State Financing of the Road Program."
- A. C. Clark, Deputy Commissioner, Engineering Div., U. S. Bureau of Public Roads. His address will be, "Engineering the Accelerated Road Program."
- George M. Foster, Chief Deputy Commissioner, Michigan State Highway Department, East Lansing, Michigan, will talk on "Building Roads with Modern Engineering Methods."

Other important subjects will be discussed by Nationally Known Experts.

- James W. Spencer, Highway Research and Extension Engineer, Department of Agricultural Engineering, Cornell University. President, Educational Div. of ARBA. He will discuss, "Keeping Highway Engineering Education Abreast of Modern Techniques."
- Fred Burggraf, Director, Highway Research Board, Washington, D. C., will give a report on "AASHO Illinois Test Road."
- J. E. Buchanan, President, The Asphalt Institute, University of Maryland, will give an address—"Bituminous Materials for Pavement Construction."
- C. Homer Cash, Road Engineer, Michigan State Highway Department, Lansing, Michigan, will talk about "Reinforcing Concrete Design Practice in Michigan."

There will be panel discussions on the many problems of the engineer and contractor. Photogrametry, electric computors, traffic problems, maintenance, bituminous pavement construction, stabilization, financing, illumination and related subjects will all be treated in detail.

This is just a small part of the total program. MAKE YOUR PLANS TO ALLOW SUITABLE TIME TO ATTEND THESE IMPORTANT SESSIONS.

Jan. 28—Feb. 2, 1957

INTERNATIONAL AMPHITHEATRE

CHICAGO

Company for a lease of the bunkers and the purchase of sand and gravel. They entered and examined the three mentioned tracts of land. The Inland Company agreed to lease these lands to the Valley Cement Company for $300 a month, which would give the latter the use of the bunkers and the right to take all the sand and gravel from the three tracts needed in its business at the rate of 7½ cents a yard for sand, and 5 cents a yard for gravel.

Later the lease executed and delivered to the Valley Cement Company did not include the two adjoining tracts bargained for, which contained practically all of the usable deposits of sand and gravel, and from which about 90 percent of those materials were, in fact, taken. Officials of the Valley Cement Company believed that the lease had included all three tracts.

After the Valley Cement Company had been operating upon the premises for some time, it constructed a culvert for the convenience of its vehicles and repaired the gravel hopper. It incurred other expenses, but also took sand and gravel from the three tracts.

In subsequent litigation, the higher court held that the Valley Cement Company was entitled to cancel the lease, that it must pay the Inland Company for the sand and gravel taken from its tracts, and that it could not recover any payment for improvements made on the tracts. The court said:

"Respondent's (Valley Cement Company's) right to a rescission of the lease is predicated upon the fact that for the balance of the term it will not have what it bargained for, and not on account of any past monetary loss."

This court indicated that the Ross Company, the owner of the adjoining tracts of land, may recover reasonable payment from the Valley Cement Company for the sand and gravel removed from its land.

Right to Natural Flow

An official of a sand and gravel company wishes to know "what are the legal rights of our company to use water for washing sand or gravel in a natural running stream? Also, can we detain water from lower users for filling our pond?"

It is important to know that the legal right of a riparian proprietor to the natural flow of a stream, running through or along his land and in its accustomed channel, undiminished in quantity and unimpaired in quality, is somewhat qualified. In other words, the right of other upper riparian owners to make a reasonable use of such water as it passes through or along their lands must be taken into consideration.

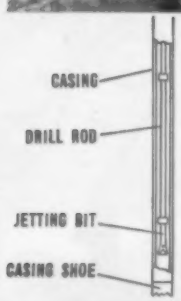
In determining the rights of a lower riparian owner the legal question very often is whether the upper riparian proprietor, as a sand and gravel company which performs excoriations, cuts canals, and the like, reasonably exercised the natural right to use the stream as it flows by or through his land. This is so because every riparian owner has a property right to the reasonable use of running water for manufacturing purposes, as well as for domestic and agricultural purposes, conformable to the uses and needs of the community, qualified by the requirement that it must be enjoyed with reference to the similar rights of other riparian owners.

On the other hand, a lower riparian owner has the right to insist that the waters in the stream shall not be unreasonably withheld by the above owners or withheld for an unnreasonable length of time. In other words, the upper riparian owner has no right by virtue of his position to interfere unreasonably with the natural flow of the stream

What's down there?

Empire
TEST DRILLS
come up with the
RIGHT ANSWERS

EMPIRE
Hydraulic
Testing
Drill



This test-drilling equipment is a "must" for pit and quarry operators and general contractors.
The EMPIRE Junior Drill used manually with solid rods or the EMPIRE Hydraulic Jetting Drill, using hollow rods, is the standard method of exploring sand and gravel deposits for composition and presence of clay, and accurately determines overburden depth and formation.
Easily transported in any kind of terrain. Assembled and ready for work in minimum time with ordinary labor.

Write TODAY for complete details

NEW YORK ENGINEERING CO. 75 WEST STREET NEW YORK 6, N. Y.

No hydraulics to break, leak or freeze-up!
No small front steer-wheels to align!
No tie-rods to bend!
No springs to break!
No frame to warp!
No long drive-shaft to maintain!

Cuts your hauling costs!

Tournapull Rear-Dump overcomes most maintenance problems of conventional haulers

Construction of Tournapull Rear-Dump is radically different (and much simpler) than that of a conventional heavy-duty hauler. In place of a foundation frame and body sub-frame, Tournapull Rear-Dump hitches rear and front wheels through a horizontal yoke extending back from the kingpin, and pivoted to body itself just above and ahead of rear wheels. Body is simpler, much stronger . . . has no frame and sub-frame to get out of line.

Look at the photo above . . . note the absence of springs, spring hangers, and tie-rods. Low-pressure tires adequately absorb the shocks of rough haul-road travel and shovel loading. Eliminated are spring maintenance, replacement time, and cost of spring parts.

Front-wheel drive and kingpin-type power steer helps simplify Tournapull construction, too. No longer must power be carried back to the rear through a drive-shaft. Bearing and lubricating problems of a long drive-shaft are eliminated. No longer is steering handled by small front wheels subject to "bulldozing" and misalignment. There are no tie rods, no hinged steering connections to become twisted or bent.

Nor do you have the troubles of hydraulic hoists or gravity dumping with these Rear-Dumps. Dump is by an electric winch, that lifts the body up on twin cables. Operation is under complete control at all times — with positive power for dump and return controlled by an electric switch on the dash. There are no oil seals, hydraulic pumps . . . no high-pressure lines and jacks to keep tight . . . no freezing up in cold weather as with hydraulics. There are no shock loads as in gravity dumping. You save on regular maintenance time because there is no hoist mechanism to check . . . only a few places to inspect and lubricate.

Let us show you how these savings can put money in *your* pocket. For proof, we'll be glad to show you performance figures from a job like yours. Or, if you wish, we'll give you names and addresses of nearby owners of Tournapull Rear-Dumps, so you can check the facts for yourself.

Model D — 11 tons, 138 hp

Model C — 22 tons, 208 hp

Model B — 35 tons, 293 hp

Now available with optional tailgate. Prime-mover also powers interchangeable scraper, bottom-dump, flat-bed, crane, logging arch.

Tournapull—Trademark Reg. U.S. Pat. Off. R-1171-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA

See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

and so give the lower riparian owners less than their usual quantities of water. However, the water may be detained long enough to accumulate to a sufficient head for manufacturing and other purposes before it is let down to the next user. In so doing the person detaining the water must act in a reasonable manner.

What constitutes a reasonable use of water in a running stream is a question for the jury having regard to the following: The subject matter and the use; the occasion and manner of its application; its object, extent, and necessity; the nature and size of the stream; the kind of business to which it is subservient; the importance and necessity of the use claimed by one party; and the extent of the injury caused the other.

The courts hold that the upper proprietor may hold back water a reasonable time to fill a pond or reservoir, although the effect is to deprive the lower owner of the use of the water to a certain extent. It is important to know also that in all controversies involving the right of a land owner to the profitable use of the waters of a stream, the complaining party must prove that negligence of the other party caused the damages for which a money judgment is demanded. Failure to prove negligence results in the court holding in favor of the party against which suit was filed.

For illustration, in *Malvern Gravel Company v. Millan,* 139, S. W. (2d) 390, it was disclosed that Millan, the owner of a farm, filed suit for several thousand dollars against a gravel company, alleging that the gravel company's employees cut the east bank of a river for a distance of about 300 yd. just a few feet from his land, and partly constructed a levee at each end where they had cut the banks of the river. Millan alleged that on account of these excoriations the river now overflows on his land. Also, Millan alleged that his land is now totally ruined for farming purposes by the change in the river, causing sand and gravel to cover the soil so deeply that it cannot be farmed again; and that on account of the swift current many deep holes were washed in his land, some of them being several feet deep.

The counsel for the gravel company defended the suit by proving that many years ago the river rose to a great height, overflowing on Millan's farm land; and that the water had deposited debris, such as trees, sand, and gravel on his land. Furthermore, Millan failed to prove that the excoriations and diggings of the gravel were negligently performed by the gravel company.

The lower court held the gravel company liable, but the higher court promptly reversed the verdict and in holding the company not liable, said:

"Before appellee (Millan) could recover, it devolved upon him to show negligence on the part of appellant (gravel company) in the use of its property which caused the damage to the land; and this, we think, he had failed to do. The evidence does not show that appellant (gravel company) diverted the flow of the water in the river so as to cause it to flow upon appellee's (Milan's) land. The land was overflowed with every 13-ft. rise in the river but not because of any negligent act of appellant. There is an abundance of evidence that the land in question has been damaged by these overflows. However, we are clearly of the view that appellant (gravel company) cannot be held responsible therefor."

Also see the leading higher court case of *Dumont v. Kellogg, Sand and Gravel,* 29 Mich. 420. This court said:

"It is therefore not a diminution in the quantity of the water alone, or in alteration in its flow, or either or both of these circumstances combined with injury, that will give a right of action, if in view of all the circumstances, and having regard to equality of right in others, that which has been done, and which caused the injury is not unreasonable. In other words, the injury that is incidental to a reasonable enjoyment of the common right can demand no redress."

For the other higher court cases dealing with the doctrine of reasonable use and the principles herein enounced, see *Pugh v. Wheeler,* 19 N. C. 50; *McLaughlin v. Mfg. Co.,* 9 S. E. 307; *Meyer v. Richmond,* 172 U. S. 82; *Gehlen Bros. v. Knorr,* 101 Iowa 700; and *Stratton v. Mt. Hermon,* 216 Mass. 83.

When Damages are Allowable

On the other hand, any person, firm, or corporation which negligently causes a natural running stream to overflow unnaturally is liable for the resultant damages.

For Illustration, in *Scott v. Watkins,* 122 Pac. (2d) 220, it was disclosed that a company constructed a dam across a stream and installed a drain box to carry off excess water. Nearby farm land was flooded because the capacity of the drainbox was insufficient to carry off all excess water. The higher court held the farm owner entitled to a recovery of damages and said:

"It is clear the water flowing in the stream in excess of the discharging capacity of the drain box would necessarily be backed up, and it is likewise clear that that could not happen in the absence of the dam. Furthermore, the continued backing up of the waters of this stream would eventually result, as it did, in waterlogging and in damaging lands and crops."

City Liable for Payment

Considerable discussion has arisen from time to time over the legal question: If a construction contract is ambiguous as to payments to the contractor, what rules of law are in favor of the contractor collecting full payment for his labor and materials?

A few weeks ago a higher court held that if a construction contract is ambiguous, its meaning shall be interpreted most strongly *against the party who wrote it.* Also, this court held that each and every portion of a contract is to be given effect, if possible, and that where all provisions, stipulations, and conditions may be given effect without one contradicting the other, then the contract cannot be said to be uncertain or ambiguous.

For illustration, in *Gardner v. City of Englewood,* 282 Pac. (2d) 1084, the testimony showed the following facts: A contractor and a city signed a contract after the former had studied the plans and specifications for a reservoir to be constructed for the city. The contract contained this clause:

"The city will furnish all reinforcement steel required in the concrete structure as shown on the drawings. . . the contractor will be required to fabricate and place all reinforcement. The city shall furnish all steel and cast-iron pipe and specials, check valves and gate valves, concrete and fencing, steel manhole covers, wrought-iron water stop, rubber water stop, cork filler, copper nails, flange gaskets, bolts, and nuts required for the successful completion of the project in accordance with the drawings and these specifications."

The project was almost completed when it developed that there existed a difference of opinion between the contractor and the officials of the city as to which of them should pay for the concrete that had been used in the construction of the

in its own element...

THE OLIVER HORIZONTAL FILTER

dewatering silica sand

Dewatering high tonnages of high quality glass sand is a natural application for this Oliver Horizontal Filter recently installed at a west coast sand plant.

The pre-treated sand flows into the Filter, is dewatered, and then a slime removing reagent is introduced to aid in further reduction of moisture content. Vacuum is shut off at the end of cycle and the sand is discharged by means of a scroll into a hopper for conveyance to final drying. Operation is fully automatic with every step visible and accessible through the entire cycle.

An interesting side light of this installation is that clay tailings from the sand recovery operation are removed to a 275′ dia. Dorr Thickener for water reclamation. Clay fraction is pumped to a nearby processing plant for further refining.

This typical installation is but another example of Dorr-Oliver ability to provide the right equipment for the job.

If you would like more information on the Oliver Horizontal Filter, just drop a note to Dorr-Oliver Incorporated, Stamford, Conn. Ask for Bulletin No. 7201.

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INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

ONLY Allis-Chalmers

ALLIS-

MOTORS are "double protected"

New Integrated Field Coils Plus *Silco-Flex* Stator Insulation Provide Superior Motor Protection... Under Any Operating Conditions

1

Integrated Field Coils are bonded in heat-stabilized resins, enclosed in a resin-impregnated sheath of oriented glass fibers and bond-locked on the pole structure . . . dimensionally stable to withstand heating and thermal shock, vibration and fatigue at elevated temperatures . . . sealed throughout against atmospheric contaminants and fully protected against destructive forces.

2

***Silco-Flex* Insulation** provides a homogeneous, void-free insulating wall of silicone rubber on stator coils. It is unexcelled in life and thermal stability at high temperatures . . . resistant to most chemicals, water, weather . . . outstanding in flexibility and resilience . . . able to withstand abrasion and corona . . . resistant to physical and mechanical forces.

Exclusive Allis-Chalmers "double protection" is available on large electrical machines with operating temperatures through Class B range.

Silco-Flex is an Allis-Chalmers trademark.

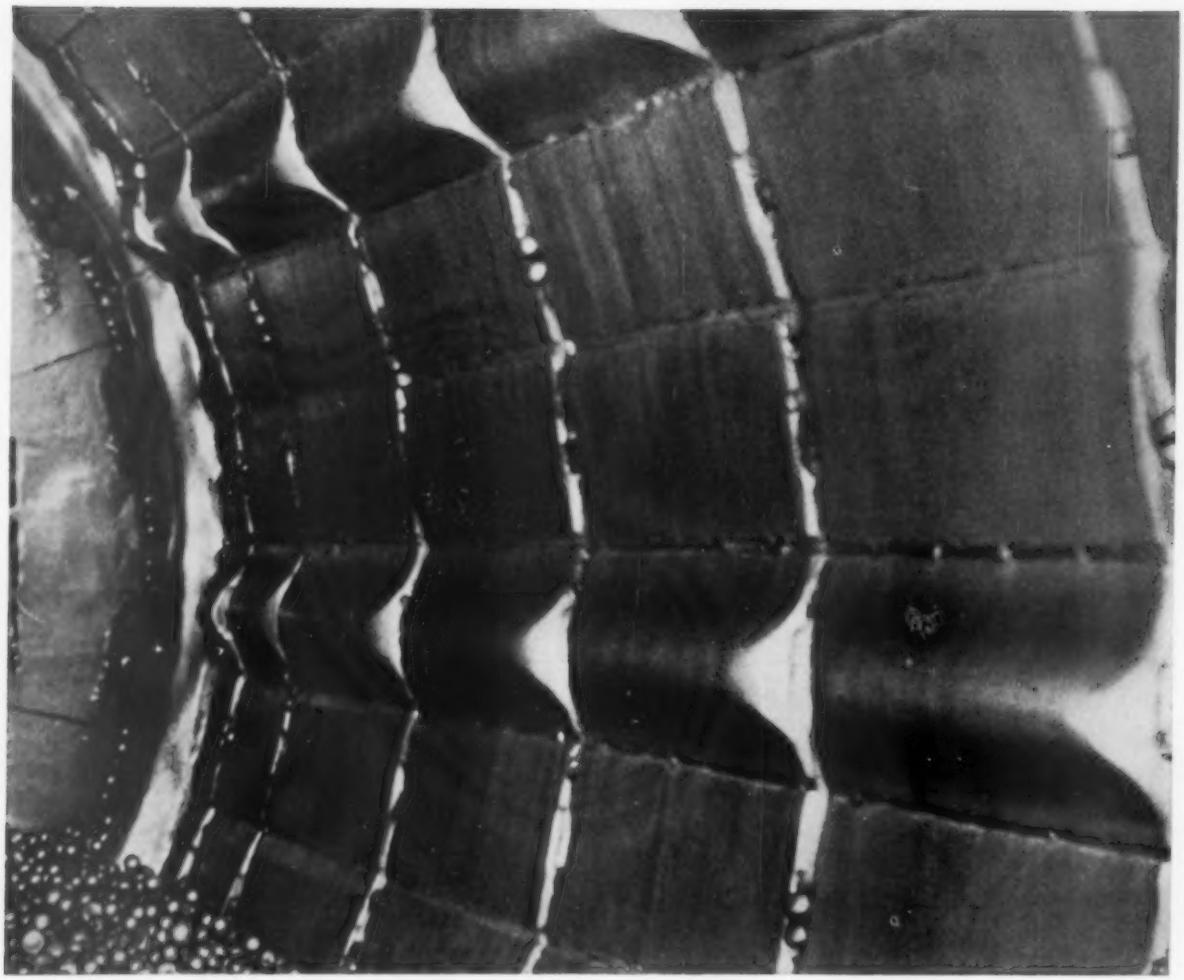
For more information on these quality insulation systems contact your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin for Integrated Field Coil Bulletin 05R8525 and *Silco-Flex* Insulation Bulletin 05R8341.

Allis-Chalmers "Double Protection," with integrated field coils and Silco-Flex stator coil insulation, adapts this 600-hp, 2300-volt, 600-rpm synchronous motor to the most severe operating conditions.

CHALMERS

A-C ALLIS-CHALMERS

A-5221



Half-million pounds of B&W standardized liner plates prove economy of Ni-Hard

Babcox & Wilcox introduced its standardized Elverite C(Ni-Hard*) liners 2½ years ago. Since then, B&W has shipped a half-million pounds of these abrasion-resisting liners for ball and rod mills.

Every plant using these *Ni-Hard liners has slashed replacement costs.*

One midwestern cement company – using 1¾" makeup balls – has found that Ni-Hard liners provide three times the service life of previously used materials. Other operators – using balls as big as 2½" in 6′ mills – are getting comparable performance.

With Ni-Hard you can double and triple the interval between relinings. For Ni-Hard, the chromium nickel white iron has hardness in excess of 550 Brinell. It means Ni-Hard liners resist abrasion, maintain their contours longer and so increase mill efficiency. Specify Ni-Hard for your next relining, or in your new mill.

*Registered trademark

INCO TRADE MARK **THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street New York 5, N. Y.

reservoir. The city officials admitted that they had entered into a contract with the contractor but alleged that the contractor was to furnish all concrete required without cost to the city.

Since the above-mentioned clause in the contract stated that the city would furnish various steel materials, including concrete, the higher court held that the city must pay the contractor $16,000 for the concrete used in the construction of the reservoir. The court said:

"Intent is to be determined from the contract itself, if possible to do so, and parties are bound by what the contract says, rather than what they say. Also, one bidding for a construction job has a right to rely upon the plans and specifications furnished him by the representative of the owner, and respective obligations of the parties are to be measured in accordance with that particular set of plans and specifications upon which a contractor submitted his bid."

Manager is Personally Liable

A certain reader presented this problem: "Recently I had a very peculiar experience, when I signed my name to a contract for my employer. By accident I overlooked putting my employer's name in the contract. Now the seller is suing me although my employer used the materials. Where do I stand in this matter? If my employer used the materials, how can I be made to pay the bill?"

Modern higher courts consistently hold that an employee who signs a contract in his own name, without disclosing the identity of his employer renders himself personally liable, even though the other party to the contract knows that the employee is acting as agent for his employer.

For example, in *Electric Machinery Company, Inc., v. Block*, 193 S. W. (2d) 631, it was shown that the manager of a corporation purchased a considerable quantity of equipment which the seller charged personally to the manager.

In subsequent litigation the manager contended that he was not personally obligated to pay for the equipment because it was used by the corporation.

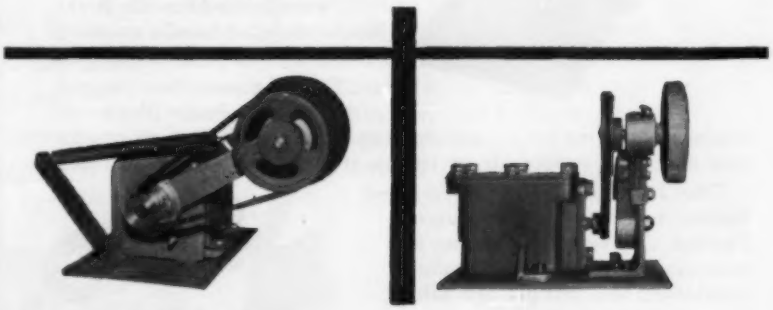
The higher court held the manager personally liable to pay for all of the purchased equipment because he failed to prove that the seller had agreed at the time the contract was signed not to expect payment from the manager.

This court indicated that an of-

"Watchdog" of your Conveyor System

ENSIGN Centrifugal Switches protect your belt conveyors against fire due to slippage on the pulleys. The switch, when used with a time delay, such as an Agastat, will automatically shut off motor when normal speed of belt conveyor is reduced due to interference.

• • • Saves replacement of expensive belting • • • prevents loss of tonnage due to down time • • • eliminates the hazard of fires • • • provides greater safety to workers • • • can be used for sequence operation of multiple belt system • • • operates forward or reverse direction.



Bulletin 1100 (Dust-tight)

Bulletin 1101 (Explosion-tested)

Product of ENSIGNeers

ENSIGN ELECTRIC AND MANUFACTURING CO.

914 Adams Avenue Huntington 4, West Va.

Drivers last longer...

when heavy-duty trucks use J-M Brake Blocks

Experienced operators know that when their vehicles are equipped with Johns-Manville Brake Blocks they can handle crushing loads without personal danger.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for dependable performance plus maximum service life on trucks, shovels and heavy machinery.

They are "standard parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are now available in Johns-Manville Assembled Sets that put new safety into your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 14, New York 16, N. Y.

Johns-Manville Industrial Friction Sets are available in a wide range of molded or woven, rigid or flexible asbestos materials.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

ficial of a corporation is relieved of all risk of personal liability on contracts which he signs with authority of his employer, provided that (1) the name of the corporation appears in the body of the contract, or on the letterhead; (2) the word "by," "for," or "per" precedes the official's signature; (3) the word "agent" follows his signature; (4) and the corporation's name precedes the official's signature, as follows: "The Willis Corporation, by John Doe, agent."

Property Owner Gives Orders

Another reader asked this question: "If a contractor for street improvements follows orders given by a property owner in violation to a city ordinance, who is liable if the city officials refuse to approve the finished work?"

Under all circumstances, when a property owner instructs or orders a contractor how to do work, that person must pay the contractor the full agreed contract price if the finished job is "unsatisfactory," or if public officials refuse to approve the job.

For example, in *Miller v. Stump*, 46 Atl. (2d) 331, the testimony showed that city officials established the grade for sidewalks, and an ordinance required a fall or decline to the curb at the street on all sidewalks of about one-half inch to the foot.

A cement contractor contracted with a property owner to lay a sidewalk. Under the terms of the contract the contractor agreed to perform the work in a manner "satisfactory" to the owner. Later the property owner instructed the cement contractor to construct a sidewalk with a degree of slant not in accordance with the city ordinance. When the job was completed, the city officials refused to approve it. The property owner refused to pay the contractor the agreed contract price, and the contractor sued for payment. In holding in favor of the contractor the higher court said:

"Defendent (property owner) having assumed responsibility for the variance from specifications, cannot avoid paying the contract price for work done as he directed it."

David H. Lyall has been elected treasurer of Air Reduction Company, Inc., New York, N. Y., succeeding Howard H. Foster who has resigned. Mr. Lyall, with the company for 21 years, became general auditor in 1944 and has been assistant controller since 1949.

Never-say-die dependability . . .
proved on the Alcan Highway!

The Alcan test run was supervised and certified by the AAA.

NEW TASK·FORCE 57 CHEVROLET TRUCKS

Six new '57 Chevy trucks tamed the rugged Alcan in one round-the-clock sprint. They covered the grueling run (normally a 72-hour trip) in less than 45 hours to prove their durability!

They took everything the truck-killing Alcan could dish out—and not a single unit dropped out or turned back due to mechanical failure! They turned in top scores for performance and economy, too! Look over the Alcan Highway Champs at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NO JOB TOO TOUGH FOR THE ALCAN CHAMPS!

You get Alcan-proved dependability in whatever light- or medium-duty model you choose. Put a new Chevy to work for you and take advantage of its extra stamina, its time- and money-saving ways!

PROVED ON THE ALCAN HIGHWAY . . . CHAMPS OF EVERY WEIGHT CLASS! CHEVROLET

Manufacturers' News

Jack Modrich, president, announces the formation of the Hydair Cylinder Corp., 5755 S. Pennsylvania Ave., Cudahy, Wis. (suburb of Milwaukee).

The company produces air cylinders with 1½ to 20-in. bores and hydraulic cylinders with 1½ to 12-in. bores all specially designed for heavy-duty service. They conform to JIC Standards and are adaptable to meet all of the specialized requirements of the automotive and machine tool industry.

In addition to air and hydraulic cylinders, the Hydair line will consist of low pressure hydraulic cylinders, high pressure cylinders, counter-balance cylinders, boosters, accumulators and special cylinders.

J. L. Modrich

W. L. Brough

Walter L. Brough, who has been serving as assistant to the president since joining the organization two years ago, has been promoted to the office of executive vice-president of Hercules Motor Corporation, Canton, Ohio. He was associated with the Timken Roller Bearing Co. and the Central Alloy Division of Republic Steel Corp., before joining Hercules.

The Smith Engineering Works, Milwaukee, Wis., manufacturers of Telsmith crushers and other equipment, announces the appointment of Robert G. Morton as Pacific southwest district manager. His territory will include California, Arizona, New Mexico, Colorado, Utah and Nevada with headquarters at 1950 Santa Fe Avenue, Los Angeles, Calif.

After joining the Telsmith organization and before entering upon his duties as Pacific southwest district manager, Mr. Morton spent several months in the shop and engineering departments becoming thoroughly acquainted with Telsmith equipment and Telsmith aggregate plant design.

American Brake Shoe Company, New York, N. Y., has announced that The Denison Engineering Company, with main offices in Columbus, Ohio, a wholly owned subsidiary since 1955, is now a division of the company. For many years a leading manufacturer of hydraulic presses, hydraulic pumps, motors, and automatic controls for aircraft and industrial uses, Denison operates two plants, one in Columbus and one in Delaware, Ohio. A large addition to the Columbus Plant is now being completed.

No change in personnel is involved in the current move. W. C. Denison, founder of the business and a director of American Brake Shoe, remains as president of the new division. F. C. Norris will continue as vice-president and general manager. E. L. Fouse, formerly treasurer of the company, becomes a vice-president.

Overseas purchasers may now obtain Fuller Company, Catasauqua, Pa., equipment with their own currency, according to an announcement from a company spokesman. Purchases would be made through Fuller's manufacturing and engineering affiliates in France and other foreign countries.

Fuller equipment manufactured abroad comprises its various types of pneumatic convevors for unloading and in-plant handling of dry pulverized and granular materials; air quenching coolers and heat recuperators for rotary kilns; clinker breaker and feeders for pulverized materials. This equipment is used by the cement industry as well as such industries as concrete products and ready-mix, chemical processing, food and feeds, rubber and plastics.

Fred R. Wilson, director of manufacture of Du Pont's Explosives Department, Wilmington, Del., has been appointed director of sales of the department. He succeeds George H. Loving, who became assistant general manager of the Photo Products Department earlier this month.

William D. Garwood, assistant director of sales, has been promoted to director of manufacture, succeeding Mr. Wilson. Richard D. Hedreen, manager of the technical service section in the explosives department, has been appointed assistant director of sales.

Judson Bemis, executive vice-president of the Bemis Bag Company, St. Louis, Mo., has announced the appointment of A. N. Weeks as director of production. He will succeed A. H. Clarke.

Mr. Weeks was formerly manager of Bemis' multiwall paper bag plant at East Pepperell, Mass. He has been succeeded as manager by F. G. Bemis, Jr.

Ralph G. Greer has been appointed assistant sales manager of the Construction Equipment Division of International Harvester Company, Chicago, Ill., succeeding C. E. Jones, who has been named supervisor of national contractors' sales.

Mr. Greer joined International Harvester at its Minot, N. D., district office in 1933. He held several positions in sales until 1940, when he was appointed assistant district manager at Mason City, Iowa, and later served in that same capacity at Quincy, Ill., and Salt Lake City, Utah.

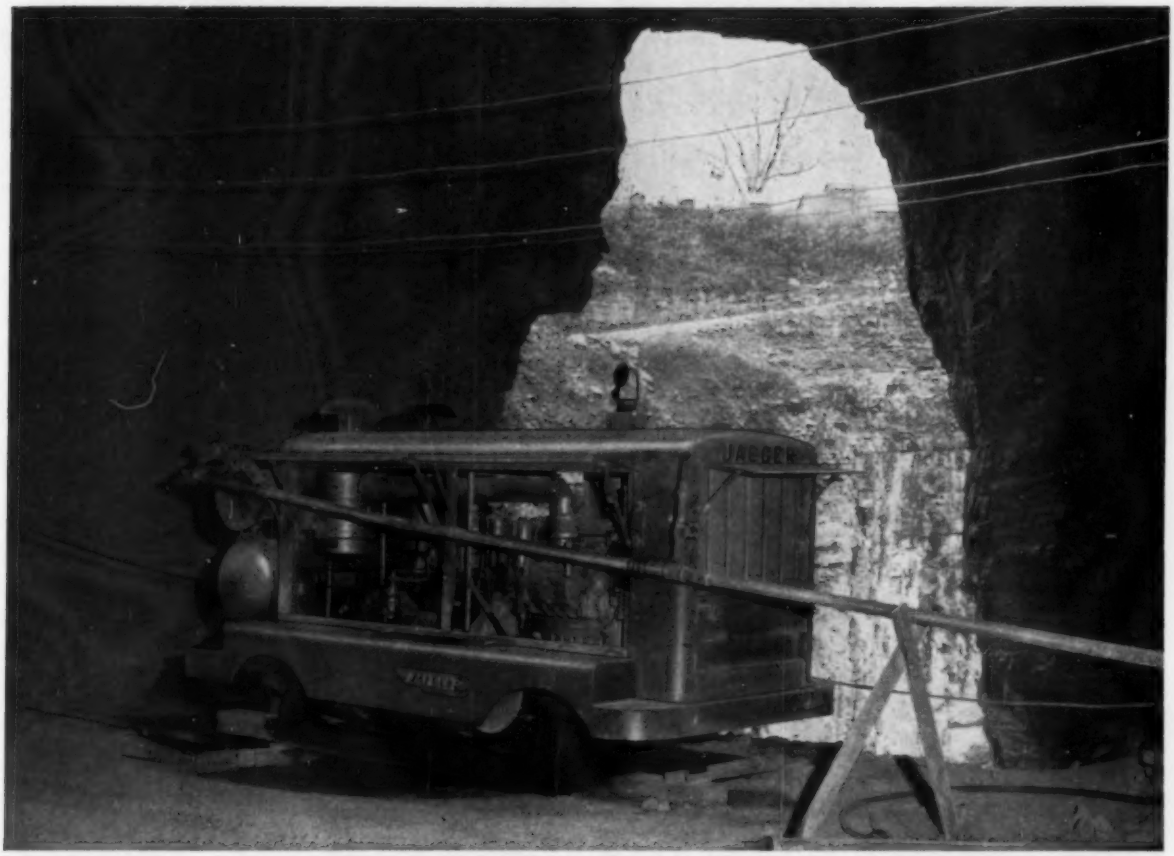
In 1951, Mr. Greer was made manager of the company's Detroit military products office and served in that position until 1953, when he was returned to the motor truck division as regional manager for the east-central region. In October 1954, Mr. Greer was appointed manager of Harvester's Washington, D. C., office.

R. G. Greer

S. C. Berube

Stephen C. Berube has been named manager of the Central Sales Region of the Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis. Headquarters for the Central Sales Region are also in Milwaukee, The region includes Wisconsin, Iowa, and Minnesota, and portions of Illinois, Michigan, Nebraska, South Dakota, and North Dakota.

Mr. Berube joined Le Roi in 1953 as a district representative of the company's rock drill plant. Prior to joining Le Roi, he had been a division engineer for the Jewell Ridge Coal Corp., Tazewell, Va., and an industrial engineer for the Island Creek Coal Co. of Holden, W. Va.



400 HOLES OF 12′ - 18′ DEPTH, PER 8-HOUR SHIFT, IN HARD MISSOURI LIMESTONE, ON 36 GALLONS OF FUEL

This is average day's work of this Jaeger "600" Rotary Compressor and two 4″ drifters, in Federal Materials Company's underground quarry at Cape Girardeau, Missouri. A. W. Zimmer, Jr., Secretary-Treasurer and Manager, reports: "We are more than 100% satisfied with the performance of the Jaeger rotary compressor. Efficiency and fuel economy are remarkable and, except for regular filter changes, maintenance expense has been zero."

Jaeger 600 Rotary ...brings new efficiency to drilling

A Jaeger "600" rotary produces the same 600 cfm of air as other "600" compressors, *using the same 6-71 GM diesel engine at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800).*

This explains why Federal Materials Company can keep two 4″ drifters drilling 8 hours in hard rock on only 36 gallons of fuel. You use less fuel, subject your engine to less wear, and turn your compressor as many as 9000 fewer revolutions every hour you work.

Smaller Jaeger Roto Air Plus® units have the same low speed, high efficiency performance. It will pay you to get full details or demonstration from your Jaeger distributor —or let us mail you Catalog JCR-5.

CRAWLER AND BOOM MOUNTINGS for both 4″ drifters was designed by Federal Materials Co. to fit their particular needs.

50th year JAEGER CONSTRUCTION EQUIPMENT

THE JAEGER MACHINE COMPANY

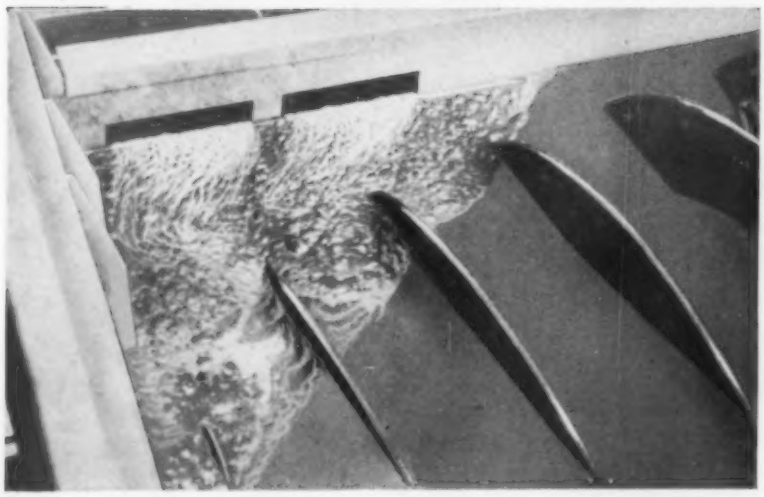
602 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • SPREADERS • FINISHERS • TRUCK MIXERS

AKINS

HEAVY MEDIA SEPARATORS

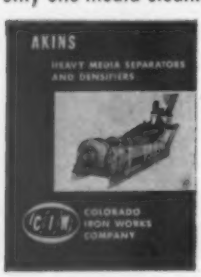
• accessibility
• visibility



Note clean separation of float product.

EXPERIENCE has proved these advantages of Akins

- Gradation of pool density from feed entry point to sink removal point provides natural cleaning of sink, and allows circulation of media at lower gravity and viscosity.
- Start-up under full load, eliminates necessity of draining vessel after shutdowns.
- Entire vessel is visible and accessible.
- Variation in rate or grade of feed is not detrimental.
- Large pool area and volume minimize tramp refuse in the product and facilitate better recovery of values from fine sizes.
- 3-product separation in one machine allows extraction of middlings, requiring only one media cleaning circuit.



WRITE FOR NEW AKINS HMS MANUAL 56

COLORADO IRON WORKS CO.

1624 17th Street — Denver 2, Colorado

AKINS CLASSIFIERS • SKINNER ROASTERS • LOWDEN DRYERS

Sales Agents and Licensed Manufacturers in Foreign Countries

A SUBSIDIARY OF THE MINE & SMELTER SUPPLY CO.

Appointment of Albert T. Metcalf as electrical engineer at Nordberg Manufacturing Company, Milwaukee, Wis., is announced. In this position he will assist all product engineering, manufacturing and sales departments and will maintain liaison with electrical equipment manufacturers.

Prior to joining Nordberg, Mr. Metcalf spent six years with Anglo-Lautaro Nitrate Corp. of Antofagasta, Chile, as electrical engineer. Five Nordberg diesel engines, including two 9,600-hp. units, are installed in power plants which furnish power for this company's mine, mill and electrified railway facilities.

A. T. Metcalf

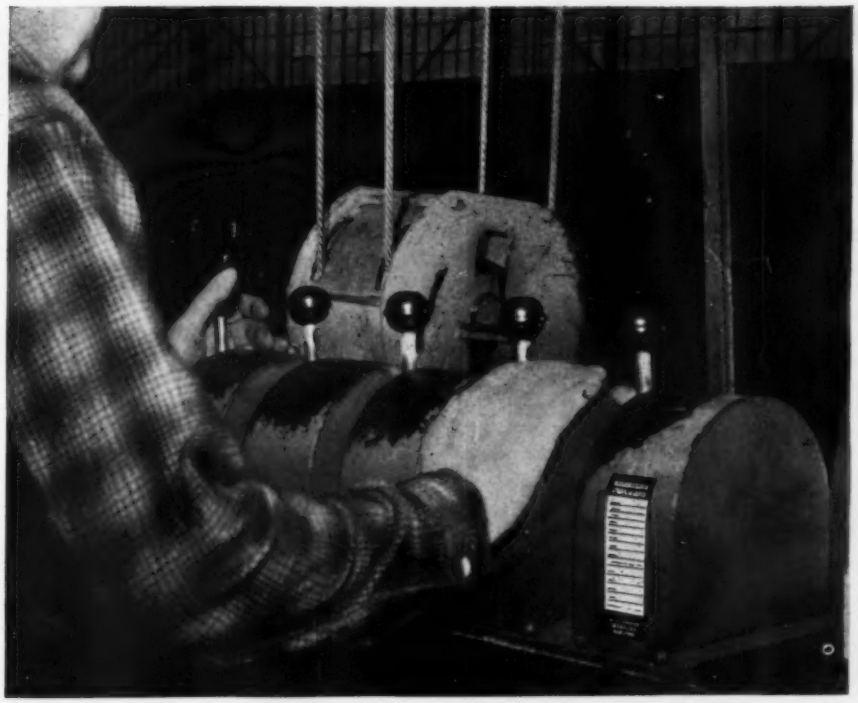
J. H. Harrigan, Jr.

Diamond Iron Works, Division of Goodman Manufacturing Co., Chicago, Ill., has announced the appointment of John H. Harrigan, Jr., as district sales manager for New England, New York, Pennsylvania, New Jersey and Delaware, as well as the Canadian maritime provinces.

The Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich., has expanded its administrative sales and service facilities by establishing regional operations in six key cities throughout the country. Headquarters for regional areas have been established in New York, Atlanta, Detroit, Chicago, Dallas and San Francisco.

Headed by a regional manager and staffed by sales, sales engineering, service and office personnel, each office will provide a basis for coordinating the entire sales and service efforts in the region.

Appointment of J. W. Means, assistant chief chemist since 1954, as chief chemist of the Chase Bag Company's general laboratory at Chagrin Falls, Ohio, has been announced. Mr. Means heads a highly specialized research and development unit where Chase Bag products are subjected to rigorous tests. Various grades of textiles, papers, films and adhesives are analyzed before use as packaging components.



SERVICE-SCORE STICKERS

provide valuable wire rope facts

... to test performance, speed reordering

For efficient wire rope operation you must have wire rope facts—brief, handy, accurate facts. You need them for safety (when did that line go on?). You need them for reordering (what size is the hoist line?). And you need them most of all for figuring cost (how long did it last?).

But gathering wire rope facts can be time-consuming—unless you have an easy, simple system.

Leschen's Service-Score Stickers provide such a system. The facts are always at hand—on the machine while the wire rope is working, and in the record book from then on.

Service-Score Stickers make it easy to compare the service you get from various rope constructions, types, and brands, so you *know which one is best* for you.

With the Service-Score System you prove to yourself that Red-Strand wire rope consistently exceeds industry standards for strength and safety.

Write for your starting supply of Service-Score Stickers now—or see your Leschen distributor.

LESCHEN
Red-Strand
WIRE ROPE

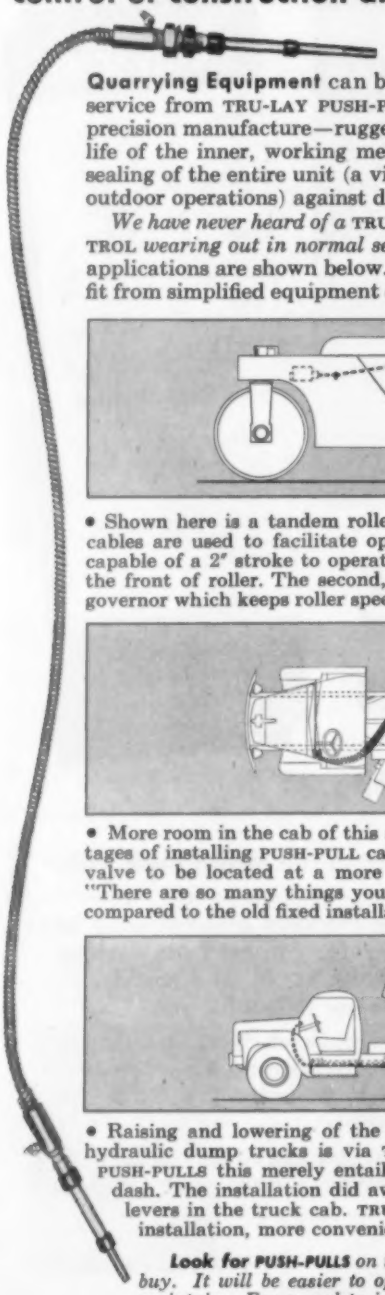
Keep the score and you'll use it more—Red-Strand Wire Rope

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

A DIVISION OF **HKP** H. K. PORTER COMPANY, INC.

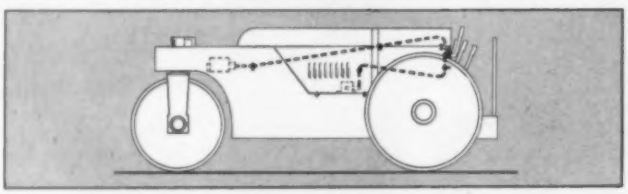
TRU-LAY *PUSH*-PULLS

give trouble-free, lifetime service for remote control of construction and quarrying equipment

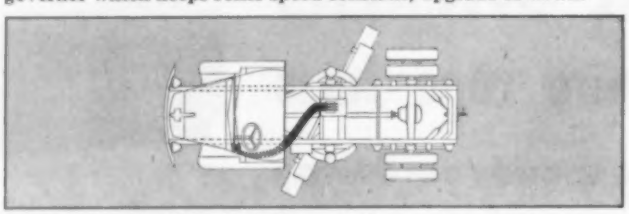


Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

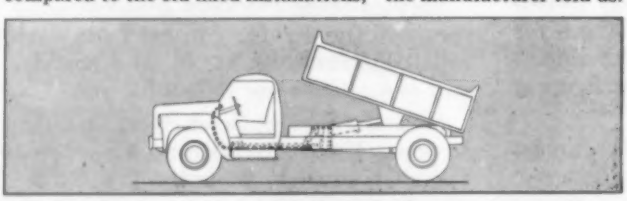
We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.



• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156″ long, is capable of a 2″ stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

***Look for* PUSH-PULLS** *on the heavy equipment you buy. It will be easier to operate and less costly to maintain. For complete information we'll be glad to send you this* DATA FILE . . .

ACCO

AUTOMOTIVE and AIRCRAFT DIVISION

AMERICAN CHAIN & CABLE

Push-Pull DATA FILE

TRADE MARK

601-K Stephenson Bldg., Detroit 2

2216-K South Garfield Ave., Los Angeles 22 • 929-K Connecticut Ave., Bridgeport 2, Conn.

The Rust Engineering Company of Pittsburgh, Penna., and Birmingham, Ala., has opened a new office at 1065 Main Street, Waltham, Boston, Mass. Complete engineering services will be available to all industries in the New England area, and to industries in other parts of the United States. These services will be closely coordinated with the engineering facilities available through Rust's Pittsburgh and Birmingham offices.

Leonard A. Wasselle, formerly with Rust's home office in Pittsburgh, has been appointed manager of the Boston office, and C. W. Churchill, Jr., of Lowell, assistant manager.

Worthington Corporation, Harrison, N. J., has announced the election of Wilbur B. Shook as treasurer, succeeding Harold A. Bellows, who is retiring.

Mr. Bellows has served the company for 16 years as assistant treasurer from 1940-42 and treasurer since that date. He will continue as a consultant on pension and insurance matters.

W. B. Shook

H. A. Bellows

Mr. Shook has been assistant secretary of Worthington since 1947 and was previously associated with the New York law firm of Chadbourne, Hunt, Jaeckel and Brown.

Douglas H. Springer, who has been a member of the legal department since 1952, will succeed Mr. Shook as assistant secretary.

J. F. Costigan has been appointed assistant director of manufacturing of Allis-Chalmers Industries Group, Milwaukee, Wis.

He has been works manager of the company's Norwood (Ohio) Works since January, 1953.

Mr. Costigan started his career with Allis-Chalmers in 1918 as a machinist in the West Allis shops, moving through a succession of positions in the manufacturing department there until he was named as assistant to the general works manager of the Industries Group at West Allis Works in 1945.

continuous *Backbone* teeth...

give *you* these advantages...

Added strength, plus increased load-carrying capacity in smaller space result from the famous "backbone" construction of these gears (formed where the helices meet), where the full face width of each gear tooth is put to work. Because the continuous teeth of all Phillie Gear herringbones are accurately generated on the most modern machines, these gears assure smooth, continuous and highly efficient gear operation . . . year-in and year-out.

If you have a problem involving high horsepower speed reduction under heavy shock loads, specify Phillie Gear Continuous Tooth Herringbones, and be assured of quiet, vibration-free, long-lived transmission of power, for both speed reducing and speed increasing applications.

Learn more about these outstanding gears by requesting Catalog # G-655.

phillie gear®

PHILADELPHIA GEAR WORKS, INC.

ERIE AVE. & G STREET, PHILADELPHIA 34, PENNA.

Offices in all Principal Cities

INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

Virginia Gear & Machine Corp. • Lynchburg, Va.

General Electric Company's Communication Equipment Section, Syracuse, N. Y., has announced that it has leased 15,000 sq. ft. of space in a former manufacturing plant at Gainesville, Ga., for a warehousing and training operation which will begin in January, 1957.

The announcement was made by B. R. White, manager of manufacturing for General Electric Communication Equipment, who said the lease for the property—formerly occupied by No-Mend Hosiery, Inc. —was signed with Alachua Investments, Inc.

Atlas Powder Company, Wilmington, Del., has announced the appointment of Dr. Fred W. Cox, Jr., as manager of its Reynolds Experimental Laboratory, Tamaqua, Pa. He succeeds Guy F. Rolland of McKeansburg, Pa., who has been named assistant to Dr. William J. Taylor, Jr., director of the Explosives Research Department. Mr. Rolland will continue to make his headquarters at Tamaqua.

Dr. Cox comes to Atlas from the Deering Milliken Research Corp., where he was in charge of chemical engineering research and development.

The new manufacturing plant of F. L. Smidth & Co., New York, N. Y., engineers and manufacturers of machinery and equipment for the cement and other industries, is located at Lebanon, N. J., and is an extension of the existing plant facilities nearby.

The transfer of certain machinery from the existing plant has been completed and a large number of new ultra-modern machine tools have been installed. The new plant is scheduled to be in full production shortly. The new facilities will be coordinated with the existing plant and constitute a very substantial increase in overall machinery manufacturing capacity.

Two advancements in the west coast regional office of Chrysler Marine and Industrial Engine Division of Chrysler Corp., Detroit, Mich., have been announced. M. J. Yost has been named regional manager of the office and J. J. Lapp has been selected Los Angeles representative.

Prior to his transfer to Los Angeles, Mr. Yost served as sales representative for Chrysler with headquarters at Seattle, Wash., and before that was sales and service representative operating out of Detroit. He has been with Chrysler Corp. 29 years.

Sam Gurley, Jr., has been elected vice-president-sales for H. K. Porter Company, Inc., New York, N. Y.

Until recently, Mr. Gurley held a similar position with Reichhold Chemicals, Inc., and previously had executive positions with Borden Company's Chemical Division and the Barrett Division, Allied Chemical and Dye Corporation. He is a graduate of the University of Missouri, a member of the Chemical Society, Tool Engineers Society and Plastics Society.

S. Gurley, Jr.

H. C. Rose

H. Chapman Rose, former Under-Secretary of the Treasury, has been elected to the board of directors of Basic Incorporated, Cleveland, Ohio.

Mr. Rose came to Cleveland in 1933 to join the law firm of Jones, Day, Cockley & Reavis. In 1938 he was made a partner in that firm. Resigning in 1942 to enter the U. S. Army as a captain, he returned from service with the rank of colonel. In 1946 he resumed his partnership with Jones, Day, Cockley & Reavis.

January, 1953, brough a second resignation from the law firm, when he was made Assistant Secretary of the Treasury. Later nominated and confirmed as Under-Secretary, he served in that capacity until January, 1956, at which time he resigned the position and returned to his former partnership.

Western Precipitation Corporation, Los Angeles, Calif., has transferred Robert P. Dedlow from the position of New York district service engineer to that of project engineer for design, fabrication and installation of a complete and fully automated dust control system to suppress open hearth dust and fume on eleven open hearths at the United States Steel Corporation's Homestead Works near Pittsburgh, Pa.

Mr. Dedlow joined Western Precipitation as a test engineer in 1947, and in 1953 was promoted to position of district service engineer for the Eastern United States. He now leaves that position for his present assignment.

The Cleaver-Brooks Company announces the appointment of the Miller & Chitty Company as manufacturers' representative for the sale of Cleaver-Brooks boilers and equipment. Located at 1367 Stuyvesant Avenue, Union, N. J., its territory will include counties in northern New Jersey and Staten Island.

Realignment of key personnel in the southern and central tire sales divisions of the Goodyear Tire & Rubber Company, Akron, Ohio, has been announced.

E. E. Pound, former Atlanta, Ga., district manager, southern division, has been appointed assistant to the southern division manager at Atlanta.

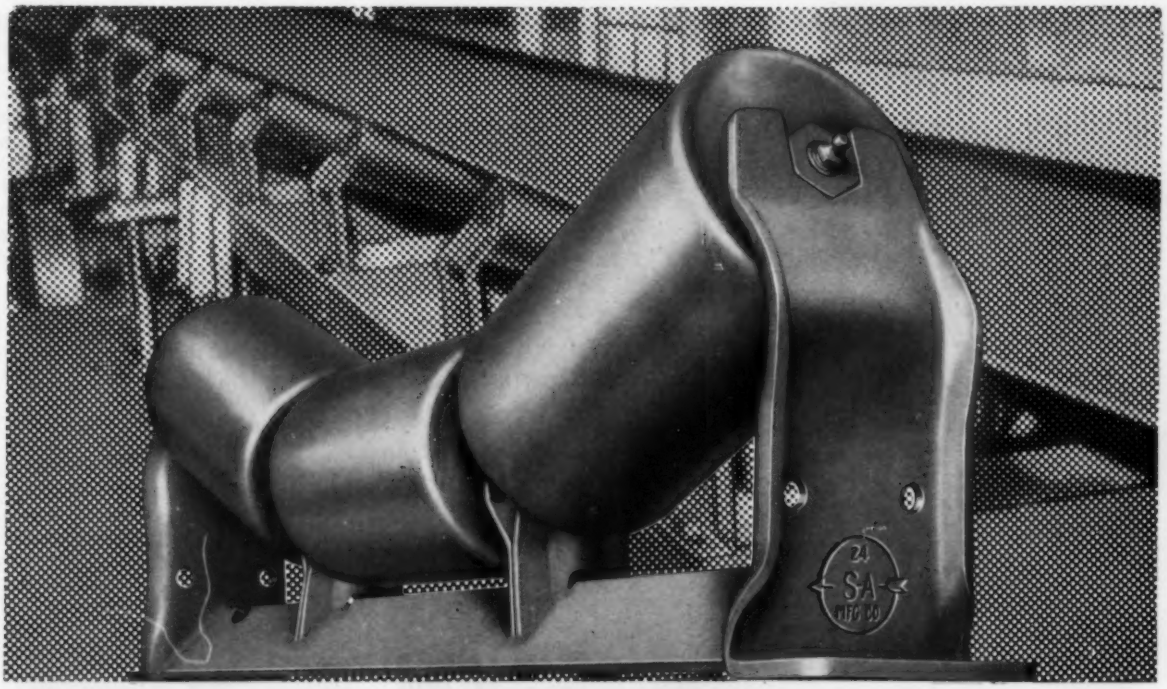
Replacing Mr. Pound as Atlanta district manager is J. A. Sapp, former district manager at Cincinnati, Ohio. D. S. Conner, formerly department manager of store operations, retail stores divisions, Akron, assumes the duties vacated by Mr. Sapp.

Dorr-Oliver, Inc., Stamford, Conn., announces the appointment of Chemical Pump and Equipment Corp., New York City, as its exclusive sales representative for chemical and industrial pumps in the greater New York metropolitan area. This organization, with headquarters at 75 West Street, New York, is well qualified to handle Dorr-Oliver pumps for the chemical process industries. Their territory includes parts of lower Connecticut and northern New Jersey in addition to the New York marketing area.

John E. Moody has been appointed district manager of the Boston Industrial District Sales Office of Joy Manufacturing Co., Pittsburgh, Pa., replacing Don L. Archibald. Mr. Archibald has been transferred to the company's New York offices, taking over the duties of the newly-formed New York industrial district sales office. Mr. Moody was previously a salesman with Joy's Chicago office.

John R. Fuller has been appointed sales manager of the Pittsburgh district of the Hewitt Rubber Division of Hewitt-Robins, Inc., Stamford, Conn. He was formerly assistant district manager for the United States Rubber Company at Houston, Tex.

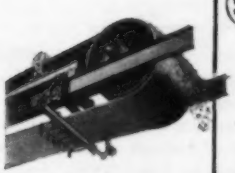
Wesley H. Raff has been appointed chief engineer of the Robins Engineers Division of Hewitt-Robins Inc., succeeding Henry F. Dischinger, who has retired under the company's pension program.



S-A IDLERS' combination of *Quality* features assure dependable, full-capacity conveying!

Profitable conveying demands maximum performance and troublefree service from the conveyor idlers. Down time is costly and you usually pay the price of buying "something just as good" through costly breakdowns. There is no substitute for quality ... the combination of quality features found only in S-A IDLERS assure maximum performance and dependable, trouble-free operation with less maintenance ... even under the most severe conveying conditions.

- **SPUN END, ONE PIECE ROLLERS** ... consisting of carrying surface and ends spun from a single piece of heavy gauge steel tubing plus an inner bearing tube welded to the spun ends. Rollers are available in 4", 5" and 6" diameter.
- **PERMANENTLY SEALED** ... precision ball bearings are protected by a die-cast double labyrinth seal which will not corrode or wear ... insures lasting protection of bearings from dirt and moisture.
- **PRE-LUBRICATED** ... sufficient grease to last the normal life of each idler is sealed into each roller at the factory. Alemite fittings also provided for easy re-lubrication if necessary.
- **QUICK-CHANGE ROLLERS** ... pre-adjusted rollers slide easily in or out of the hex-slots in the supporting brackets ... providing fast roller changes without the use of tools.



S-A BELT CLEANER

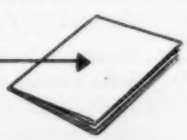
Protects and extends the life of valuable belts. The spring-blade wipes wet or dry particles from belts. Adjustable to any width ... easily installed ... no moving parts ... no power drive required. Request Bulletin 1754.

S-A HOLDBACKS

Mounts on headshafts of belt conveyors and bucket elevators to prevent reversal under load in case of power failure. Safeguards personnel and equipment. Quickly and easily mounted ... engages with instant positive grip but without shock. No ratchet to become fouled. Request Bulletin 155.

—WRITE TODAY

... for complete information.
Request Bulletin 355.



STANDARD PRODUCTS DIVISION
STEPHEN S-ADAMSON MFG. CO.
20 Ridgeway Ave. Aurora, Illinois

YOU'LL KNOW WHAT'S THERE ...BEFORE YOU KNOW IT...

If you want to know what you're going to run into below the surface . . . and just what equipment you will need to do the work properly and save you money . . . your call for exploratory drilling should be aimed at SPRAGUE & HENWOOD INC. They have a wealth of experience and modern equipment ready to serve you. Well-trained personnel, adequate supervision and the latest in machinery, all tend to assure you the results you are looking for.

Don't just build without foundation investigation . . . find out what's down there, first . . . and let SPRAGUE & HENWOOD find it out for you . . . You'll know what's there, before you know it.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.

BRANCH OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH
BUCHANS, NEWFOUNDLAND • GRAND JUNCTION, COLORADO

A new nylon plant designed to produce 40,000,000 pounds of fiber annually to meet the growing demand for its use in tire cord and other industrial products will be built by the Du Pont Company in Richmond, Va. The multi-million dollar project will be erected on the site with the company's rayon plant and will be in addition to the large existing plant for production of rayon yarns there.

At a special meeting of the board of directors of the Frank G. Hough Co., Libertyville, Ill., a subsidiary of International Harvester Company, Frank G. Hough, founder and president of the company, was elected to the newly created office of chairman of the board of directors.

G. A. Gilbertson, formerly executive vice-president and general manager, was elected president and chief operating officer.

F. G. Hough

C. L. Slayman

C. L. Slayman, formerly plant manager of the Timken Roller Bearing Company's Mt. Vernon plant, has been named as production supervisor of Rock Bits.

Mr. Slayman started his career with the Timken Company as a production clerk in the Canton plant in 1923, and became production supervisor of the Mt. Vernon plant in 1936. In 1948, he was promoted to assistant superintendent and in 1953, became plant manager.

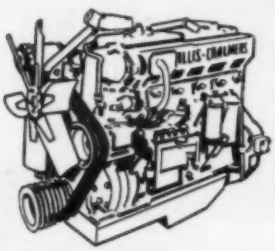
L. W. Mundy has been appointed chief bituminous engineer for Pioneer Engineering Works, Inc., Minneapolis, Minn., a subsidiary of Poor & Company, Chicago. Mr. Mundy joined Pioneer in June, 1950, devoting his activities in the engineering department primarily to electrification of Pioneer crushing and screening equipment. In 1952 he was transferred to the bituminous section where he assisted in the development of Pioneer's VIBROmatic bituminous paver.

In his new position, Mr. Mundy will be responsible for design of all bituminous mix plants.

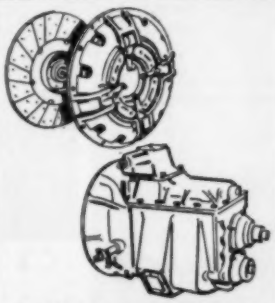
Look at the EXTRA WORK OUTPUT

the Allis-Chalmers TS-360 Motor Scraper gives you

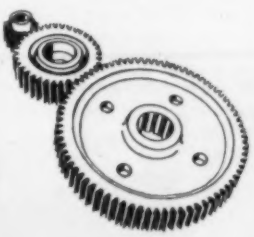
Here are some of the design features that put the TS-360 way out in front in steady performance, dependability and length of service life.



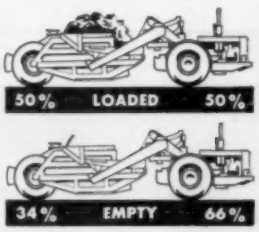
MORE USABLE HORSEPOWER. Allis-Chalmers diesel engine delivers 280 hp — 18.66 hp for each struck yard. This power gets the TS-360 away from the pusher fast . . . gives you speedier cycles, more trips per hour. In this engine, follow-through combustion holds effective working pressures to take advantage of better crankshaft leverage.



BIG-CAPACITY CLUTCH AND TRANSMISSION give fast, smooth operation under all job conditions. Clutch has air-actuated booster to reduce clutching effort and increase shifting efficiency. The heavy-duty transmission gives unmatched torque output in each gear range.

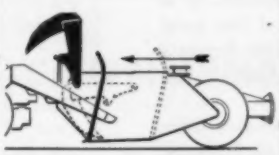


EXTRA-HEAVY FINAL DRIVES feature rugged differential assembly, carrier-housed drive shafts, final drive gears supported by large roller bearings and heat-treated drive axles. This long-life power train transmits maximum engine output for extra work volume, extra profit.

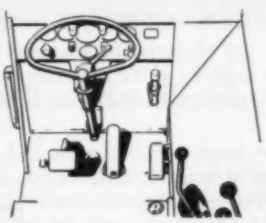


EXTRA TRACTION. The TS-360 motor scraper provides greater tractive effort, loading or traveling. Two-thirds of the empty weight is carried on drive wheels. Loaded weight is distributed equally between tractor and scraper wheels for better balance, increased flotation, safer hauling.

EASY-LOADING BOWL. Wide, low bowl design with curved bottom and offset cutting edge assures full capacity loads in less time. Curved bowl bottom "boils" dirt in, filling corners, heaping load with less spillage.



CONTROLLED DUMPING ACTION. Forward movement of ejector forces out load. High apron lift prevents material from jamming. This combination provides a continuous flow of material for a smooth, even spread.



POSITIVE STEERING. Two-stage selective power steering makes the operator's job easy . . . provides safe, feather-touch response and full maneuverability whether traveling at high speeds or in cut or fill.

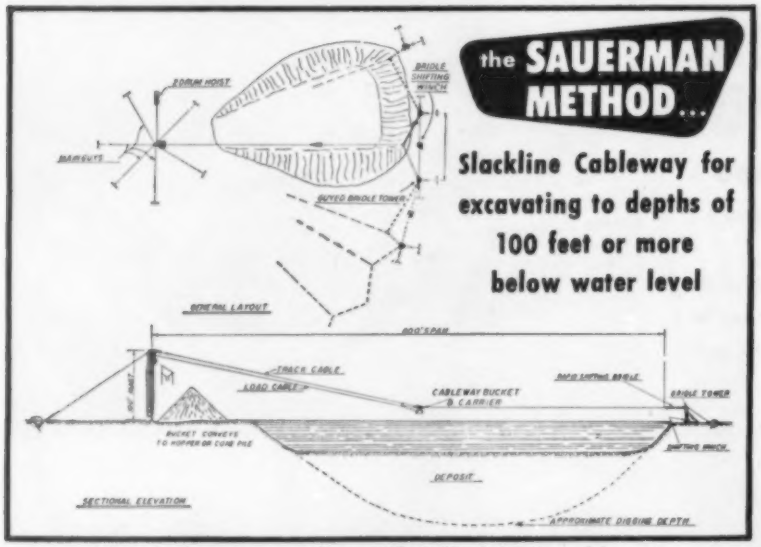
OPERATOR CONVENIENCES add to production, too. Easy-to-reach controls, full visibility, four-wheel air brakes, roomy platform, comfortable air-foam seat are some of the features that help operator get maximum output from the TS-360.

More and more TS-360's are coming into your area every day. Ask your Allis-Chalmers construction machinery dealer where you can see them in action. Remember, too — your Allis-Chalmers dealer stocks True Original Parts and offers factory-approved service methods and factory-trained servicemen for your convenience.

ALLIS-CHALMERS CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

HOW TO GO UNDER WATER AND GET ALL THE MATERIAL FROM YOUR DEPOSIT



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Cableway at Cabinet Gorge Dam digs and hauls from tailrace 1000 ft. away. (Full details in Sauerman News No. 143.)

New York gravel producer switched to cableway for underwater operation of his pit. Average haul is 600 ft. from a 50-ft. depth (Sauerman News No. 141).

Deposits below water yield new profits with a long reaching Sauerman Slackline Cableway. On job after job this machine has proved to be the most efficient for this type of operation. It is especially effective where the material to be excavated has good depth and will flow to the bottom of the cut. For shallow deposits or non-caving material a rapid shifting device is used to change the line of operation.

One man controlling the hoist digs, conveys and elevates from deposit to plant over spans of 1000 ft. or more . . . across streams, lakes, bogs or deep pits. The powerful load line pull insures digging penetration. Tensioning the track cable lifts the bucket which is inhauled at high speed and dumps automatically. Gravity return completes the fast operating cycle. Bucket capacities range from ⅓ to 3½ cu. yds.

To get fast, economical long range excavation, and the shortest, most direct way from pit to pile use a slackline cableway. Contact Sauerman for specific recommendations. No obligation. Request Catalog C, showing detailed specifications and photos of slackline cableways in action on all types of deep digging jobs.

SAUERMAN BROS. INC.

634 S. 28th AVE. | BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

The sale of certain assets of Cummins Diesel Sales Corporation, Charleston, W. Va., to a new company, Cummins Engines of West Virginia, Inc., is announced.

President of the new corporation is L. E. Williams, who until this purchase had been manager of distribution, Cummins Engine Company, Inc., Columbus, Ind. Headquarters for Cummins Engines of West Virginia, Inc., will remain at 1607-09 Kanawa Boulevard West, Charleston.

Mr. Williams has been associated with Cummins since 1950, when he joined the company as Rocky Mountain regional manager with headquarters in Denver, Colo. He was named manager of distribution for Cummins early in 1955.

L. E. Williams

W. H. Wilson

William H. Wilson, 40-year-old executive from New Orleans, has been designated as the new president of Virginia-Carolina Chemical Corporation, Richmond, Va. He has been executive vice-president of the Standard Fruit and Steamship Company, which trades primarily in bananas from Central America.

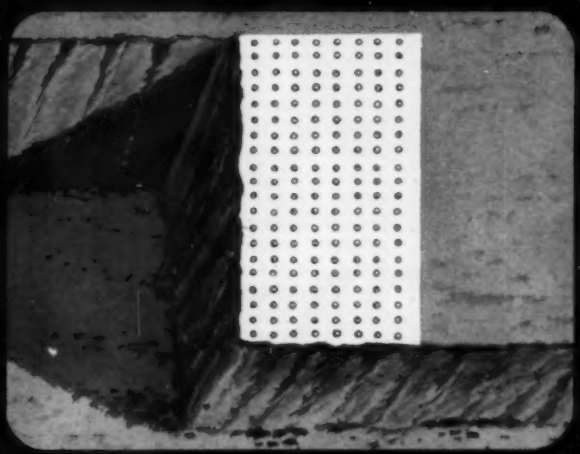
Mr. Wilson joined the executive staff of V-C October 1, and will make a tour of the company's facilities throughout the nation before his formal election as president.

Roy K. Ferguson, president and chairman of the board of St. Regis Paper Company, New York, N. Y., and Paul Neils, of Portland, Oregon, have jointly announced that the holders of more than 51 per cent of the 300,000 outstanding shares of the common stock of J. Neils Lumber Company have granted St. Regis options to acquire their common stock holdings in exchange for shares of St. Regis common stock on the basis of two and one-half shares of St. Regis common for each share of Neils common. Paul Neils, son of the founder of the Neils company, is also president, director, and one of the large holders of Neils common stock, most of which is owned by members of the Neils family.

PROLONGED CONFINEMENT COUNTS

...in breakage and control

This is the area to be shot. A limestone quarry face 150 ft. wide . . . 34 ft. high. Burden: 60 ft. Wagon drill holes. Object: get good breakage and displacement . . . without sacrificing control.



Solution: shoot it the ROCKMASTER way, using alternate pattern. 160 holes. Approx. 50 lbs. of Atlas explosives per hole. ROCKMASTER millisecond delay caps at bottom of holes.

Blast shot heavy. Proper confinement of explosives energy pays off. Look at the terrific breakage! Well-controlled throw. Muck pile well displaced. And look at the straight, clean wall!

PROLONGED CONFINEMENT—the Rockmaster® way

Anchor Stone and Materials Co., Tulsa, Okla. was after exceptional breakage on this limestone quarry shot. Shooting it "heavy" the ROCKMASTER way gave better-than-expected results. The blast produced a well displaced, excellently broken muck pile which meant easy digging, maximum loads, and faster crushing . . . economies all along the line.

Prolonged confinement is what counts! The blast, initiated at the bottom of the holes with ROCKMASTER millisecond delay electric blasting caps, keeps confined to the burden. It's this right combination of the ROCKMASTER method and caps . . . plus Atlas explosives . . . that gives—

- **good control**
- **improved breakage**
- **greater efficiency**
- **better public relations**

To get the most out of your blasting methods and your explosives, discuss prolonged confinement with your Atlas representative. You can benefit by his ideas and experience. And get "Better Blasting"—Atlas' informative newsletter on latest methods and materials. Write us to put your name on our mailing list today.

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

Opening of a San Francisco warehouse at 1862 Rollins Road, Burlingame, Calif., has been announced by the Jeffrey Manufacturing Company, Columbus, Ohio. The building also houses the Jeffrey San Francisco sales headquarters, formerly located at 870 Market Street, San Francisco. Stanley M. Mercier is manager of San Francisco sales headquarters; William T. Davis serves as application engineer, and Henry G. Neubaumer is warehouse manager.

Meckum Engineering, Inc., Ottawa and Chicago, Ill., announces the appointment of Robert Nestor as district sales engineer for the Meckum Sand & Gravel Jig and other products of the Meckum line. He has headquarters in the Minneapolis, Minn., area and will serve the Northwest and North Central states.

Mr. Nestor has had an extensive background in jigs and their applications, his past 11 years being associated with the Jeffery Mfg. Co. as sales engineer, serving the coal and aggregates industries.

Meckum also announces the appointment of William S. Gorham, Jr., as sales engineer in the Chicago area. He has moved his home from Milwaukee to Chicago. Mr. Gorham has had extensive experience in engineering and sales work in his past positions.

Construction of a new half-million dollar pilot laboratory was started recently by the Dewey & Almy Chemical Company Division of W. R. Grace & Co., Cambridge, Mass. The new laboratory will house equipment and facilities for the storage, distillation and purification of monomers as well as coagulation and drying facilities.

H. J. Halliday, formerly purchasing agent, has been named director of purchases for the Jeffrey Manufacturing Company, Columbus, O.

Three divisional purchasing agents also were appointed: C. A. Lane, Industrial Division; C. E. Firestone, Mining Division, and E. L. Corwin, Machinery and Factory Supplies.

Caterpillar Tractor Co., Peoria, Ill., has announced the formation of a new Caterpillar Foreign Trade Group, and two new domestic divisions, manufacturing, and parts and service.

The Caterpillar Foreign Trade Group will bring together into one closely coordinated organization all activities concerned with the company's foreign business. Included will be the activities of the company's present subsidiaries in Australia, Brazil, and Great Britain, and two new subsidiaries, Caterpillar Americas Co. and Caterpillar Overseas C. A. William Blackie becomes president of the group, with W. J. Bornholdt, V. V. Grant, J. R. Munro, and G. E. Spain as vice-presidents. Mr. Blackie and Mr. Spain will continue to hold office as executive vice-president and vice-president, respectively, of the parent company.

The manufacturing division will include the company's eight U. S. manufacturing plants, and three general office departments, manufacturing, purchasing, and traffic. Vice-president C. A. Woodley, whose experience with the company has included all phases of its manufacturing operations, will give administrative direction to this division. He has been with Caterpillar 30 years, and was elected a vice-president in 1954.

The parts and service division will include the service department, and two other domestic departments, created from parts general office, called parts distribution and parts sales. Vice-president E. W. Jackson will head this division. He joined the company in 1929 as a research engineer. Since 1933 he has held assignments in parts and service and was elected a vice-president in 1950 with administrative direction of all parts and service activities.

THE KEY TO SUCCESSFUL SCREENING

ALL NEW IN DESIGN

WRITE FOR NEW BROCHURE

HANCO ELECTRIC SCREEN HEATERS

eliminate "blinding" and "clogging" of wire screens, thus making beating and brushing practices obsolete. Designed for heavy-duty service, HANCO Heaters with Quick Change Attachments are quickly installed and easily adapted to new or existing screen installations with such features as large capacity secondary terminal, a 16 step temperature changer, dust enclosure compact, exclusive overload protector.

EXCLUSIVE SCREEN TENSIONING DEVICE
(Replaces Existing Parts)

Fiberglass plate — insulates conductor from frame — eliminates draw bolt insulators.

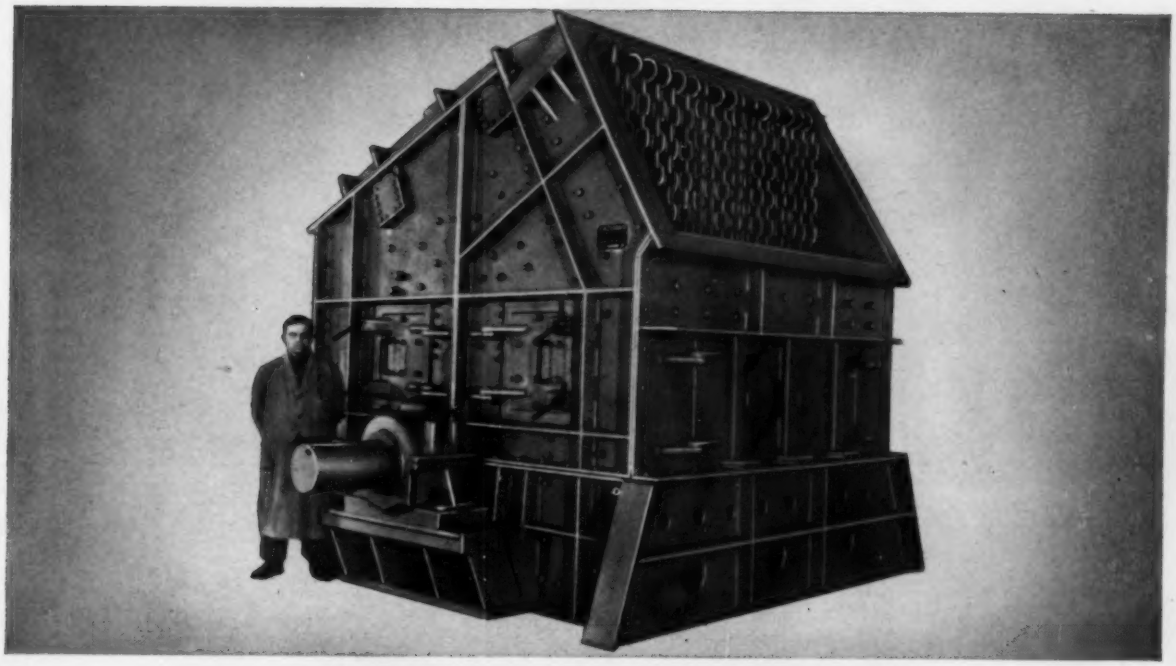
Wedge-shaped conductor bars offers positive contact with cloth.

Representatives throughout the World.

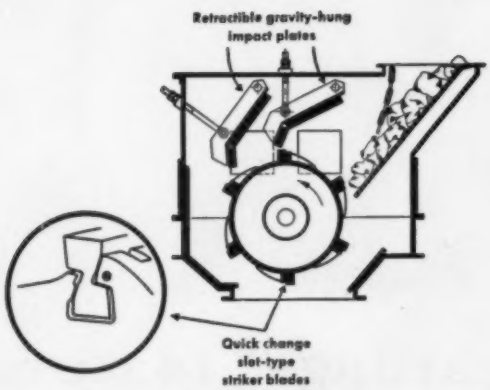
F. R. HANNON & SONS

1605 Waynesburg Rd. S.E., Canton 7, Ohio
ENGINEERS — Since 1926 — MANUFACTURERS

WIDER HORIZONS



FOR *IMPACT* CRUSHING



RE-CRUSHING BY IMPACT

Re-crushing by impact represents a significant advance in the technique of aggregate production. With the ever increasing demand for the finer sizes—and the emphasis on ⅜" stone—the premium sizing of impact crushing is of the greatest importance.

The HAZEMAG impactor, equipped with "fineness-control", regularly re-crushes to 75-80% minus ½" and can be set still finer if desired. As is usual with impactors, the product is of cubical shape with "flats" eliminated.

Shown in photograph: HAZEMAG Impact Crusher, Model #AP5BR. Rated Capacity: 500 tons per hour.

OVER 1200 HAZEMAG IMPACT CRUSHERS NOW INSTALLED ALL OVER THE WORLD

HAZEMAG M·B·H· *IMPACT CRUSHERS RAPID DRYERS*

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Reforma 20, Desp. 102,
Mexico D.F. City

Munster (Westf.) Germany

How many yards per hour?

PAYLOADER® "more yardage" features

Balanced four-wheel-drive, torque-converter and exclusive power-transfer differentials give more effective traction on mud, gravel, ice and snow for more reliable crowding power. Coupled with this crowding power is the unusual pry-out action and 40° tip-back of the bucket at ground level to get full bucket loads with less spillage loss. The result is that a "PAYLOADER" can

dig more

The 40° tip-back of the bucket at ground level permits a carry position that is close and low for maximum stability and with bucket opening almost level to prevent spillage of heaped loads. Hydraulic system shock absorber cushions the loaded bucket while carrying, smooths the ride and allows higher carrying speeds with less spillage. These features enable a "PAYLOADER" to

carry more

It's the yards delivered that count on any job and that's where a "PAYLOADER" really pays off. It gets more load in the bucket with less spillage to begin with — it can carry at higher speeds with less spillage — it can maneuver faster because the power-shift transmission requires no stopping for ANY shift. All these advantages enable "PAYLOADER" tractor-shovels to

deliver more

More yards on any job!

No one knows better than you that a rubber tired tractor-shovel can do so many jobs, under so many kinds of job conditions, that the yardage handled can vary considerably. That's why yardage figures can be so misleading unless all the factors are taken into consideration . . . kind of material . . . whether in-place or re-handling . . . operator efficiency . . . length of haul . . . waiting time for trucks . . . one location or scattered jobs, and many other variables that affect daily output.

But of this you can be certain . . . on any given job the new "PAYLOADER" tractor-shovels will deliver more yards per day than any comparable size tractor-shovel . . . and will do so continuously shift after shift.

The knowledge and experience gained in building thousands of tractor-shovels over the past 30 years is your assurance that a "PAYLOADER" is superior in design, engineering and performance . . . that it will outperform and outproduce any other comparable unit on any job.

So don't be deceived by "box-car" yardage figures . . . take a close look at the "PAYLOADER" . . . on *your* job . . . and you be the judge. Your "PAYLOADER" distributor will be happy to arrange a demonstration at your convenience.

THE FRANK G. HOUGH CO.
750 Sunnyside Ave., Libertyville, Ill.

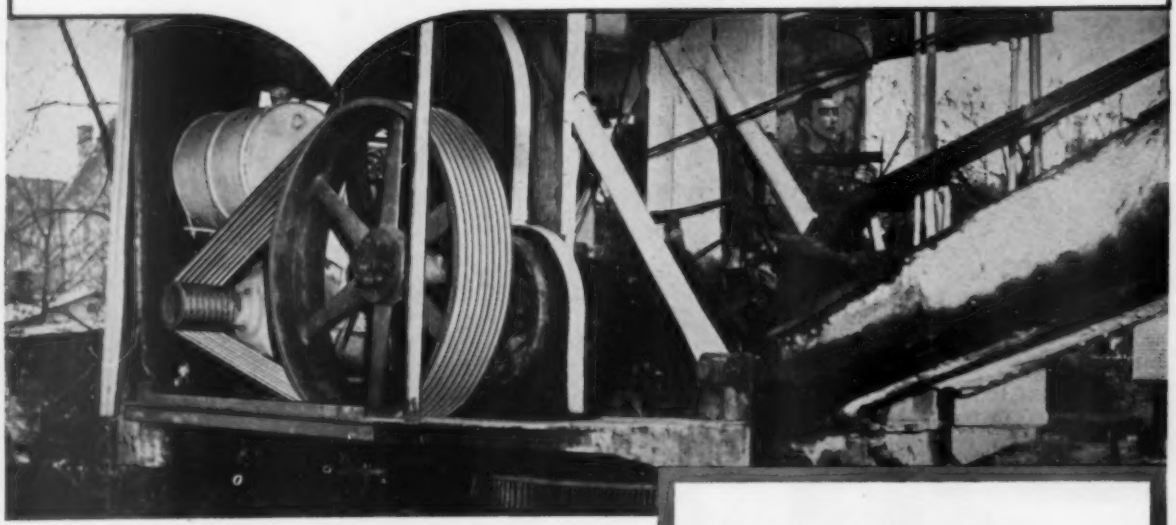
Send data on 4-wheel-drive "PAYLOADER" tractor-shovels as checked

- ☐ HO (2¼ yd. payload, 1¾ yd. struck)
- ☐ HH (1¾ yd. payload, 1-1/3 yd. struck)
- ☐ HU (1-1/3 yd. payload, 1 yd. struck)

Name_____
Title_____
Company_____
Street_____
City_____
State_____ 7

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

These super-tough V-belts saved construction firm $1,600 first year



How Gates Super Vulco Rope solves tough drive problems

Wherever . . . whenever . . . you have a tough drive problem—the problem of handling shock loads, of overcoming heat and weather, or of limited space—have one of our belt specialists show you how the problem can be solved with a Gates Super Vulco Rope Drive.

For example: Bise & Shortt, General Contractors, of Clintwood, Virginia, had a chain drive on their one-yard power shovel shown above.

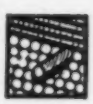
After six months of use, the worn chain would whip under load, causing both chain and sprocket to wear out still more rapidly. New chain had to be installed every year.

Then Ayers Shortt called in a Gates engineer to solve the problem. With space limited and severe shock-loads a factor, the Gates man recommended a Gates Super Vulco Rope Drive for lowest initial cost and continuing economy. "The shovel runs like new," says Mr. Shortt, "and every year the Gates drive is saving us the $1,600 it cost in parts and lost time to replace the chain drive."

Gates offices and distributors are listed in phone book yellow pages in all major industrial centers. The Gates Rubber Company., Denver, Colorado—*World's Largest Maker of V-Belts.*

The Mark of Gates Specialized Research

No Other V-Belt has ALL these Advantages



1. Tough, resilient Tensile Cords

Super-strength tensile cords provide 40% greater horsepower capacity . . . easily absorb heavy shock loads . . . reduce number of belts required . . . save weight and space.

2. Concave Sidewalls (US Pat. 1813698)

Concave sides (Fig. 1) increase belt life. As belt bends, concave sidewalls become straight, making uniform contact with sheave groove (Fig. 1-A). Uniform contact means less wear on sides of belt . . . far longer belt life.

3. Flex-Weave Cover (US Pat. 2519390)

Provides greater flexibility with far less stress on fabric. Cover wears longer . . . increases belt life . . . more power available to driven machine.

4. High Electrical Conductivity

Built into Gates Super Vulco Ropes for safer drives (in explosive atmospheres).

5. Oil, Heat, Weather Resistant

Special rubber compounds make Super Vulco Ropes highly resistant to heat, oil, and prolonged exposure.

TPA 117

Gates SUPER VULCO ROPE Drives

These two Mack LRX 15-ton dumpers haul clay for the Standard Portland Cement Division of Diamond Alkali Company. **Their unique design solves . . .**

a sticky problem

. . . the problem of dumping heavy clay that often sticks in the box, particularly in winter. This has been overcome by use of a special exhaust-heated dump body with a low-angle scoop that provides efficient dumping even on the coldest days.

Just as important to the efficiency of this operation is the use of Macks to maintain load schedules. It's a demanding job—a job that's best served by the matchless hauling stamina and dependability of Macks.

Why not follow the example of this satisfied Mack user? Whatever your particular needs, there's a Mack off-highway dumper that will do the job better and more economically. Standard heavy-duty dumpers and super-duty trucks with payloads up to 34 tons . . . choice of Mack 170 or 205 horsepower Thermodyne® Diesel engines or larger . . . transmissions with or without torque converters . . . hydraulic steering boosters . . . exclusive Mack-built two- and four-wheel drive rear axles . . . plus many other exclusive features.

With Mack, you can get the truck you want, generally from stock—trucks with a long-established reputation for on-the-job dependability and economy. For full details, contact your local Mack Branch or Distributor. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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ROCK SERVICE, TRACTION TYPES, OR RIB TREADS
All sizes from 1100 x 24 to 2700 x 33, and new sizes 29.5 x 25, 29.5 x 29 and 33.5 x 33.

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for contour and straight cutting

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Industry proved GILCO Wire Saws offer the new, moderately priced, SHAPECUTTER, combination contour and straight cutting saw. New sheave hub protects shaft from abrasive. Round steel cover protects sheave, is quickly removable for easy access to wire sawing strand. Diaphragm type pump assures constant flow of correct abrasive mixture.

There's a GILCO Wire Stone Saw to meet all contour and/or straight cutting requirements. Write for bulletin 200. Dept. PQ

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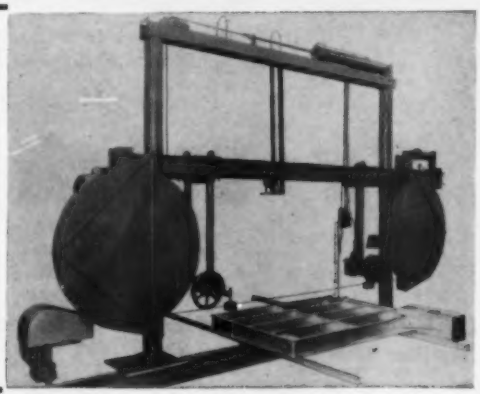
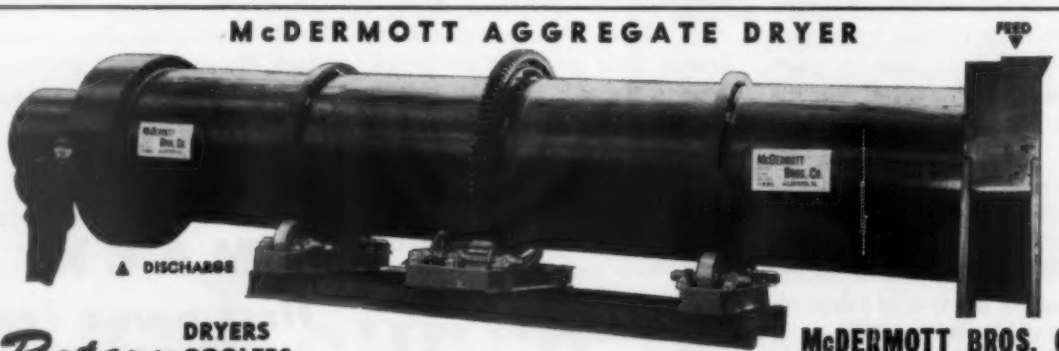


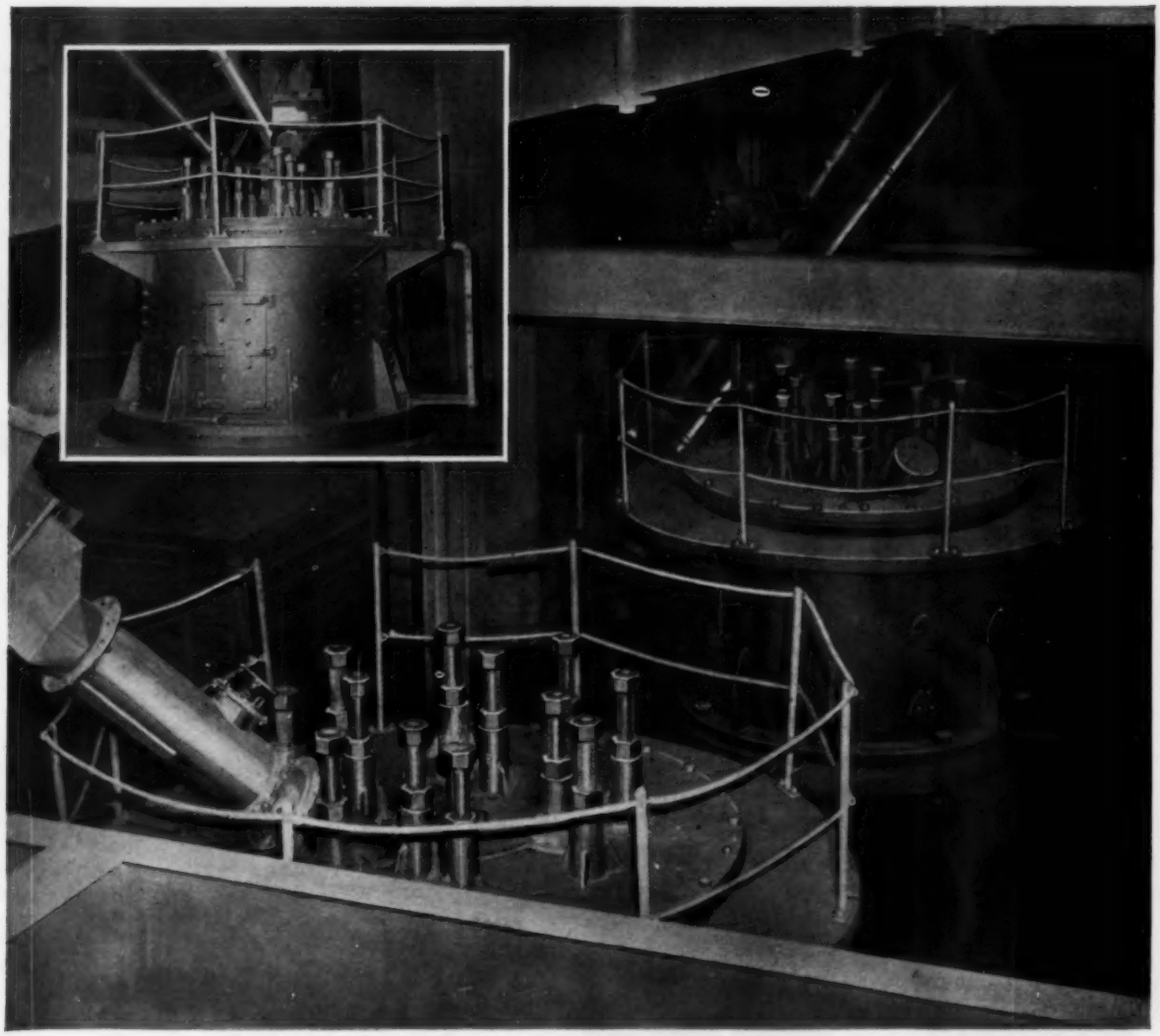
McDERMOTT AGGREGATE DRYER



Rotary DRYERS COOLERS KILNS

Write for Information

McDERMOTT BROS. CO.
Established 1895
Allentown, Pennsylvania



CLOSED-CIRCUIT GRINDING AT LOW COST

with B&W Type B Pulverizers

At Alpha Portland Cement Company's plant in Cementon, N.Y., two B&W Type B Pulverizers grind raw materials in a B&W Closed-Circuit System. One pulverizer has been in service for about 20 years and the other more than one year. Total capacity is 90 to 100 tons per hour and grindability is about 55 Hardgrove.

Alpha and other users have discovered that long life is built into the grinding elements of B&W Pulverizers. This means efficient, low-cost grinding.

Many long service records prove that B&W Type B Pulverizers require less power, low maintenance and minimum space . . . offer, high fineness, easy access and long life.

For raw grinding economy call on B&W. Write, The Babcock & Wilcox Company, Boiler Division, Process Equipment Department, 161 East 42nd Street, New York 17, N. Y.

BABCOCK & WILCOX

BOILER DIVISION

C-218

Fast D Tournapull, owned by Texas Lightweight Aggregate Co., gathers speed leaving process-

PACKAGE MORE SALES

Put more sales in your packaged product—
specify bags by Percy Kent.
PK's fresh, creative bag designs
and high technical standards of bag printing
dominate the displays in any dealer's store.

SINCE 1885

MULTIWALLS • COTTONS • BURLAPS
PERCY KENT BAG COMPANY, INC.
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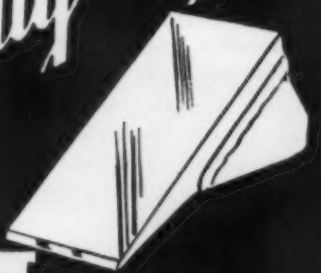
Scratchboard drawing of our Kansas City plant . . . an excellent technique for bag printing. Do you like it?

H&L

Teeth that really dig!



H&L TOOTH CO.

1540 SO. GREENWOOD AVE.. MONTEBELLO, CALIF.

Fine Sand Recovery

Over 55% of Charles E. Wood Company business has resulted from sales of Auto-Vortex Classifiers as *replacement or auxiliary* equipment to help other classifying systems do the job *they were meant to do but have failed to do.* 100% of these Auto-Vortex "emergeney" installations have proved their unequalled ability to make sharp splits and to recover fine sand from large volumes of water at low cost. These facts strongly suggest that the sand operators who discovered Auto-Vortex Classifiers *on the second guess* would be money ahead if they had installed a complete Auto-Vortex Plant in the first place. A call or letter to the Charles E. Wood Company, 906 North Water Street, Milwaukee 2, Wisconsin, is your perfect start toward doing it right the first time!

Fast D Tournapull, owned by Texas Lightweight Aggregate Co., gathers speed leaving processing plant for 1-mi. trip to loading area. This one "D" — plus crawler-mounted front-end loader, and a tandem-disc plow — replaced a fleet of 4 tractors and 2 towed scrapers.

At Haydite plant, one "D" replaces hauling fleet

moves same quantity in 1/3 less time!

Haydite is the tradename for lightweight expanded clay and shale aggregate, manufactured by Texas Lightweight Aggregate Company at the Stafford, Texas plant a few miles southwest of Houston. Black clay is broken up into marble-sized chunks, heat-expanded in rotary kilns, then cooled. The rock-hard finished aggregate is sold to ready-mix plants and manufacturers of concrete products for lightweight concrete and masonry units.

To keep its Rotary Kiln Haydite aggregate plant in Stafford, Texas, supplied with black clay, Texas Lightweight Aggregate Company, a division of Texas Industries, Inc., relies on one D Tournapull and a crawler-mounted front-end loader with tandem-disc plow. The "D" — working 16 hrs. daily — replaces 4 slow-speed tractors and 2 towed scrapers that worked around the clock to supply plant at the same rate.

The clay used is plastic, and very dense . . . hard as a rock when dry . . . soft and slippery when wet. The trick is to excavate it with just the *right* moisture balance — then haul direct to kilns or stockpile it in a sheltered area for future use. Condition of clay deposits at any given time depends on the weather of many preceding days and must be disced properly to maintain proper moisture for special loading.

Hauls over 2 to 4-mi. cycles

Sometimes, when stockpiles run low, a large amount of clay must be moved in a few hours to supply the kilns. Strip-mine areas are about a mile from the processing plant. Because good-sized yardages have to be loaded and moved fast, Texas Lightweight Aggregate finds Tournapull just the right machine. Working alone, "D" handles a job that previously required many machines.

Single Tournapull supplies materials

Total excavation, loading, pit-to-stockpile hauling, and dumping on shed, is handled by this single Tournapull. Rig self-loads as much as 6½ loose yds. per trip . . . hauls up to 1 mi. to stockpile sheds at speeds to 29.5 mph.

Spreads in tight quarters

Dumping at the plant involves careful maneuvering. The stockpile is next to the kilns, under a large shed. Turning space is restricted. The "D" frequently has to climb up and dump over previous stockpiles, with limited overhead clearance. 90° turn, electric power-steer through geared king-pin lets this LeTourneau-Westinghouse earthmover maneuver easily into the shed . . . spread . . . and swing out for another load in seconds.

"They turn fast and they're maneuverable," commented Richard Messer, Stafford Plant Superintendent. "They get out quick and back quick — both on the pick-up and spread, that differential helps us work good in mud during wet weather."

Get facts for your type work

If your earthmoving operations require steady production, plus hauling over a considerable distance, it will pay you to investigate the advantages of the 9-yd. D Tournapull, or the larger 18-yd. "C" or 25-yd. "B" sizes. Let us show you owner-verified facts on Tournapull production for *your* type of work.

"D" turns as it dumps on clay stockpile. In another 10 seconds, rig will be returning at high speed to loading area.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-1051-M-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

Hendrick H ... Means High Quality for Quarries

Hendrick . . . Pioneer Perforator of Special Quality Steels for 80 Years

Take Hendrick's 80 years of experience in selecting and specifying the best analyses of steel for the crushed stone industry. Add to it Hendrick's 80 years of experience in perforating plate for vibrating screens and you end up with a combination that can't be beaten.

That's why Hendrick Perforated Plate stands up longer and affords more accurate sizing. No other screening medium can compare to it for uniformity of mesh, for non-blinding clearance and for long, trouble-free service life. Hendrick perforated *H* quality steel is supplied in any desired size or shape of openings.

It can also be furnished flat or corrugated. Write for details.

SEE OUR CATALOG IN SWEET'S

Hendrick
MANUFACTURING COMPANY
39 DUNDAFF STREET, CARBONDALE, PA.
Sales Offices in Principal Cities

PERFORATED METAL • PERFORATED METAL SCREENS • WEDGE-SLOT AND HENDRICK WEDGE WIRE SCREENS • ARCHITECTURAL GRILLES • MITCO OPEN STEEL FLOORING • SHUR-SITE TREADS • ARMORGRIDS • HENDRICK HYDRO-DEHAZER.

Still Available!

NEWEST

PORTLAND CEMENT

PLANT MAP

This map shows the locations of all the portland cement plants and distributors now operating in the United States, Canada, Mexico, Alaska, Hawaii, and Cuba, plus those that will be completed in 1956. These plants are listed alphabetically, by state and city, so they can be located easily. Production capacity in barrels, types of process, and brand names of each firm's products are also shown.

The map is 34 by 40 inches and is printed in black and white on heavy, durable 60-lb. paper stock. Prices are as follows:

1-10 maps	$1.00 each
11-25 maps	$ .75 each
more than 25 maps	$ .50 each

Please make your request for these maps on your company letterhead. Also, send along a check, cash or money order to cover the number of maps you wish to purchase.

PIT AND QUARRY PUBLICATIONS
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Attractively Bound Pit & Quarry Volumes

Six issues, Jan. through June or July through Dec., bound in best grade Dark Green washable buckram, imprinted name on cover, cost but $3.85 per volume.

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EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

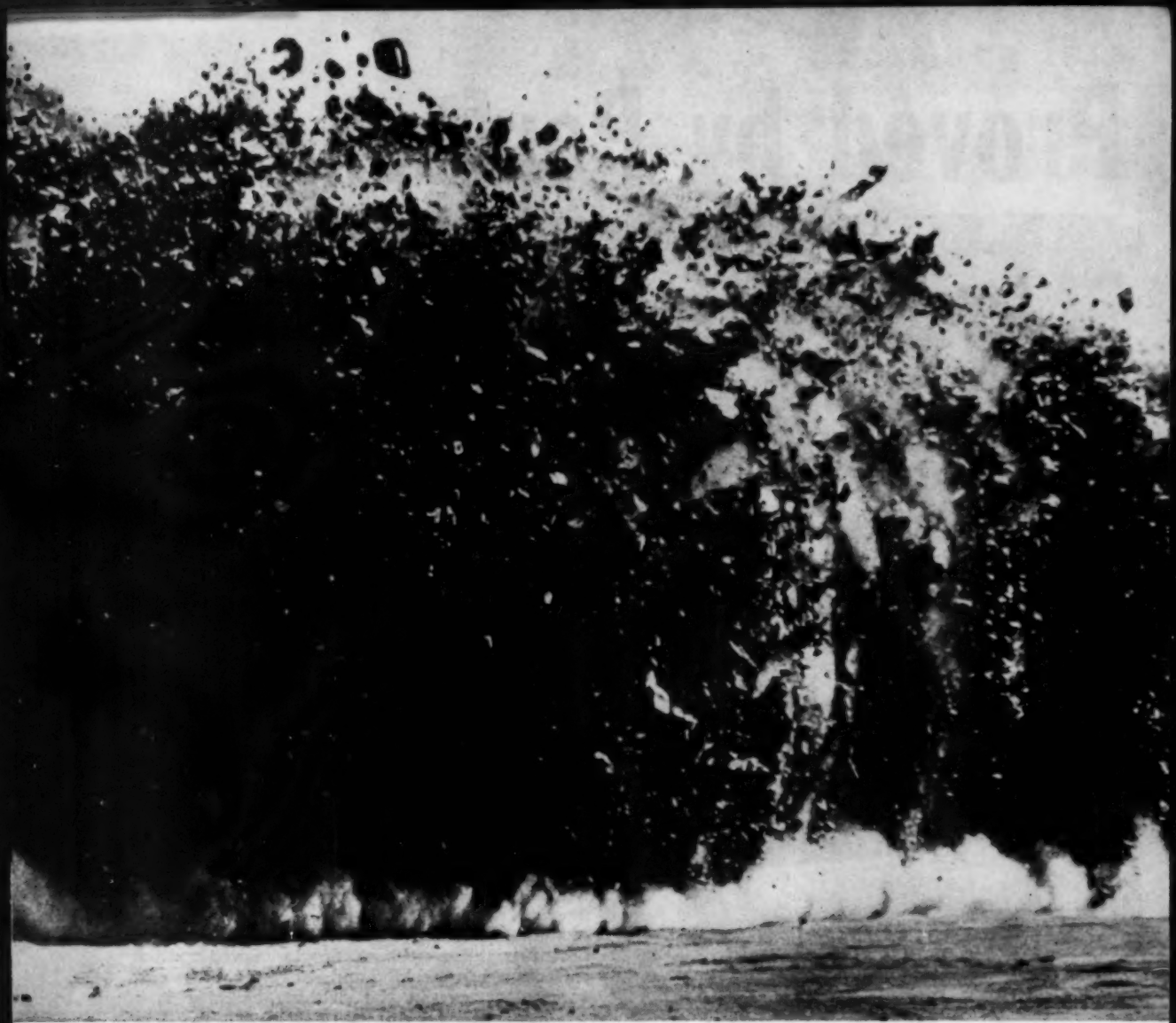
FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA



EXPLOSIVES RESEARCH IN ACTION

This photograph of a blast of 27,000 pounds of Hercules® explosives in a traprock quarry is conclusive proof of how proper explosives technique pays off. The initial breakage was excellent, providing a sloping bank of broken rock for easy shovel digging and uninterrupted crushing and screening operations in the plant.

Achieving satisfactory results from primary blasts requires the selection and use of the right explosives materials and methods. For more than 40 years, Hercules has pioneered in the development of improved explosives techniques for quarrying, mining, seismic prospecting, and construction. A Hercules representative will welcome the opportunity to assist in solving your blasting problems.

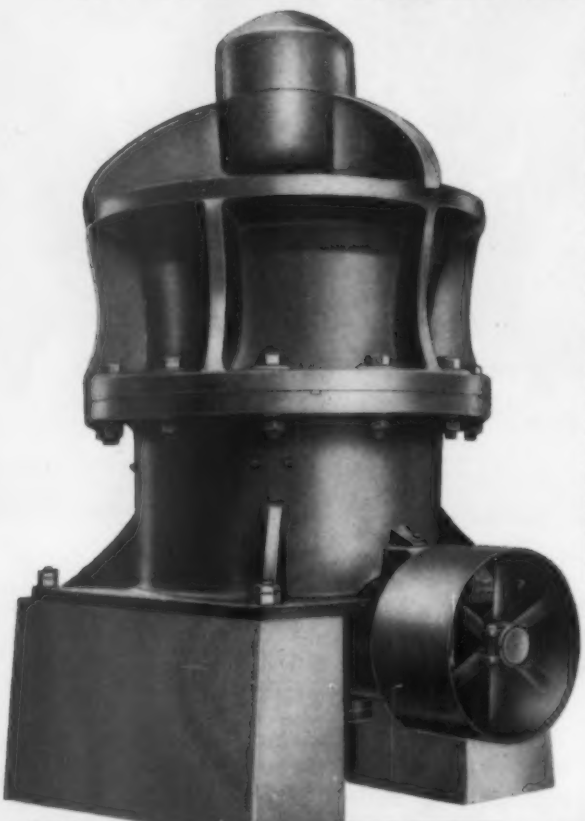
HERCULES POWDER COMPANY
INCORPORATED
Explosives Department, 960 King St., Wilmington 99, Del.

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

XR56-6

Proved by Performance

IN MORE THAN 806 INSTALLATIONS



For over a half century Traylor has been designing and custom building heavy-duty machinery to help stone producers achieve more efficient and profitable production. As a result, there are today more than 806 Traylor Reduction Crushers operating in installations throughout the world . . . a large percentage of them in the rock products industry. The Reduction Crushers we are building today incorporate many exclusive design features developed by Traylor Engineers as the result of this long-standing, intimate knowledge of special rock crushing problems.

Traylor original Curved Concaves and Bell Head apply power as a direct crushing force. As a result, lifting and churning of material in the crushing chamber is greatly reduced to keep waste fines to a minimum . . . to produce greater quantities of a more uniform, cubical product on the first pass through the crusher. Traylor curved crushing surfaces reduce choking and packing because each succeeding zone in the crushing chamber is of greater capacity than the one before it. This results in much greater production at an amazingly low cost per ton produced.

Traylor Reduction Crushers are available in six sizes with feed openings from 3″ to 22″. Send for Bulletin #8112 containing complete description, illustrations and specifications.

TRAYLOR ENGINEERING & MANUFACTURING CO.
821 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York • Chicago • San Francisco
Canadian Mfr: Canadian Vickers, Ltd., Montreal, P. Q.

These Traylor features insure maintenance economies to match the extra production efficiency of Traylor TY Reduction Crushers.

* Bronze Bushed Eccentric promises long, trouble free service.
* SPRING MOUNTED SUSPENSION affords protection against tramp iron.
* Auxiliary outside lubricating system includes pump, cooler and filter.

Traylor

REDUCTION CRUSHERS

PRIMARY GYRATORY CRUSHERS

ROTARY KILNS

SECONDARY GYRATORY CRUSHERS

BALL MILLS

JAW CRUSHERS

APRON FEEDERS

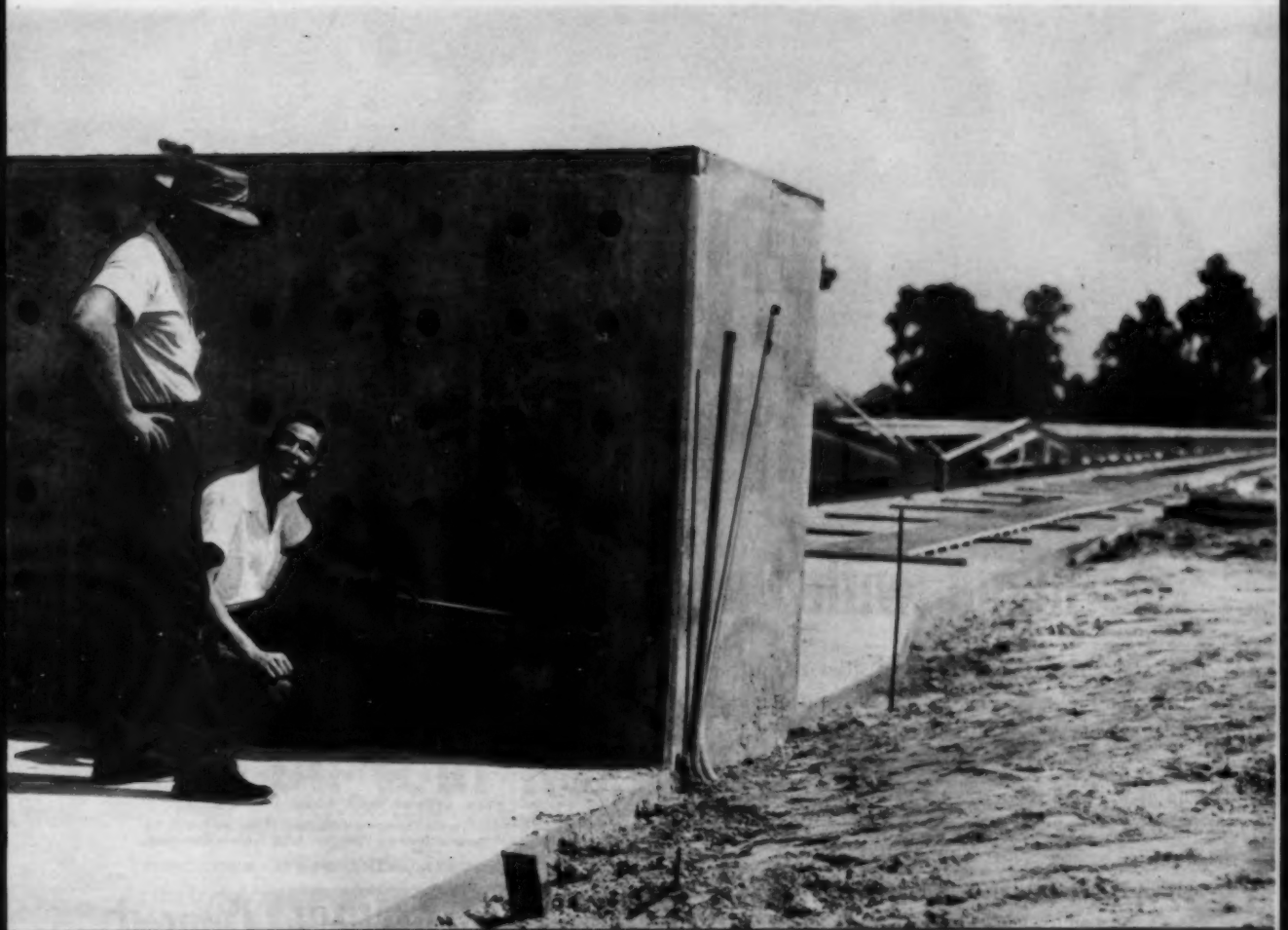
XR56-6

For the manufacturers of
Ready-Mixed Concrete
Prestressed Concrete
Precast Products
Concrete Blocks
Concrete Pipe

DECEMBER 1956

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY



The Strongest Prestressing Abutment Walls in Existence. (See Page 182.)

Better blocks . . .

Clean attractive appearance of Duraplastic-made products is evident at Jewell Concrete Products Plant, Waco, Texas. **Ranch Stone** units in foreground are a specialty of this plant. Their pleasing color tones are featured in many attractive southwestern homes for both interior and exterior masonry walls.

made with Duraplastic* cement

When concrete manufacturers consider the advantages of producing a more uniform, more *salable* block, the cement they choose is usually Atlas Duraplastic. That's because experience proves that Atlas Duraplastic makes better-looking products with clean, true edges, better face texture and improved weather resistance. Naturally, such blocks are easier to sell and make better masonry.

YET DURAPLASTIC COSTS NO MORE than regular cement—requires no unusual changes in procedure.

Complies with ASTM and Federal Specifications. For descriptive booklet, write:

UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL CORPORATION SUBSIDIARY

100 PARK AVENUE, NEW YORK 17, N. Y.

*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

AIR-ENTRAINING PORTLAND

D-180

Atlas® Duraplastic Cement

MAKES BETTER CONCRETE PRODUCTS AT NO EXTRA COST

OFFICES: *Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco*

UNITED STATES STEEL HOUR—Televised alternate Wednesdays—See your newspaper for time and station.

Save up to $1000 on your next gas fork truck

Priced about 25% under any other gas trucks in the popular 4000 lb. capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to $1000.00 on your next gas fork truck. Write to The Baker-Raulang Company, 1215 West 80th St., Cleveland 2, Ohio.

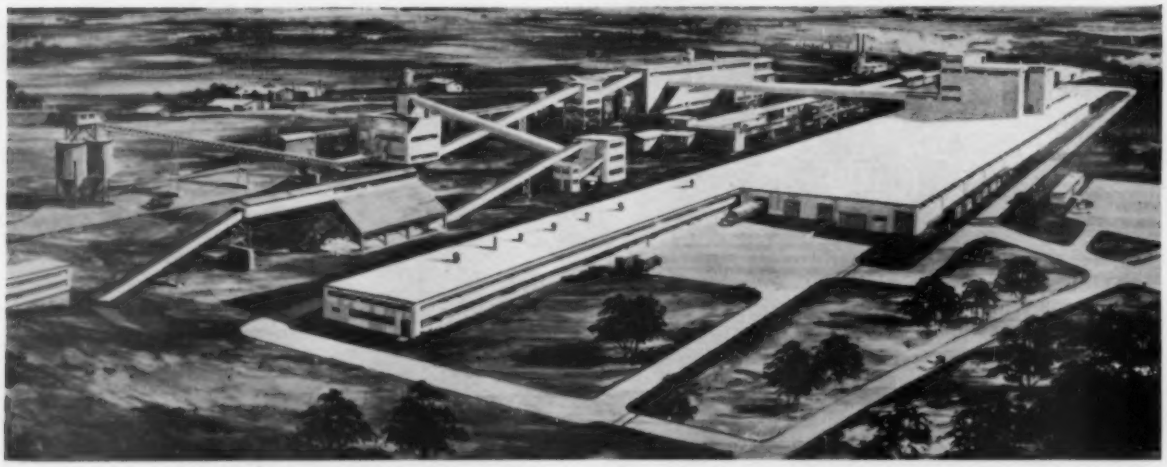
A Subsidiary of Otis Elevator Co.

BAKER

"Yardloader"

TRADE-MARK

5GY4



Barber-Greene installation at new Celotex plant. Ten of the eleven conveyors are housed. Building at far left houses primary crushers. At right is wallboard plant. Mill is in background.

(Left). Material rejected by the separator is carried to two storage bins by this 329-foot Barber-Greene conveyor. Standard 60-inch truss minimizes the number of supports required. (Right). A 422-foot conveyor in gallery utilizes traveling tripper to build long stockpiles.

1600′ conveyor system serves new Celotex plant

Eleven Barber-Greene conveyors are incorporated in the design of a new plant of the Celotex Corporation.

The 1600-foot conveyor system handles every product from the raw, heavy gypsum rock to the fine finished plaster. This processing requires a wide variety of types and sizes of conveyors—all coordinated to deliver continuous high capacity at lowest operating cost.

Built with *standardized* components, these versatile conveyors are delivered faster, go up easier and require less costly engineering time.

These pre-engineered components can be used in almost limitless combinations, from the most complex systems right down to the small setups requiring a single conveyor. When it comes to adapting Barber-Greene conveyors to meet changing needs, standardized components make the job easier, faster and more economical.

Write for literature on the conveyors pre-engineered to cut costs

56-23-PE

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

The CONCRETE MANUFACTURER

December 1956

Price-Cutting -- Who Profits?

RECURRENTLY over the last six months, we have heard rumors of price-cutting in the concrete block industry. This practice has been with us since competition became part and parcel of trade, but usually price-cutting occurs in isolated instances, as when a producer is subjected to a temporary squeeze by his neighbor for various reasons. Lately, however, the prevalence of complaints has caused us to wonder if there isn't something more significantly responsible, particularly in certain areas.

Since 1940 the domestic concrete block industry has enjoyed the best volume and profit ever attained. Everywhere, over the last decade, the emphasis has been on greater production of blocks. In some places this pressure has resulted in over-equipping certain plants, whose yards now bulge with unsold stock. Most producers, confronted with such a condition, will resort to any means to move the surplus stock and reduce their burden of expense.

While the national highway program will bolster other segments of the concrete industry, it will do little for the blockmaker, at least until the new roads make available sites for new factories and houses. The shortage of bricklayers in certain cities plays its part in increasing the cost of masonry construction, permitting other types of construction to thrive. The recent squabble in Milwaukee between the advocates of poured concrete *vs.* concrete masonry basement walls points up the constant pressure which can be expected, even in such "block-minded" places.

All of these considerations, and others that come to mind, point to times of keener competition ahead for the block producer, both with his zealous neighbor and with other competitive masonry products. But we do not think that drastic price-cutting is warranted as a panacea. We are reminded that a 10 percent cut requires a 66 2/3 percent increase in volume to bring the same net return as before the cut. If this volume were temporarily down for any reason, who would profit from a price cut? No one except the competing industries.

We feel that it is high time for blockmakers to heed the advice given at every meeting of block men—from the national conventions to the smallest local get-together—as to the harmful effects of price-cutting. This admonition applies especially to producers who may be tempted in times of stress to disregard the basic teachings of experience for the will-o'-the-wisp of quick gain. Your neighbor's problems are akin with yours. Let's see if a basis of mutual confidence and respect can be made to pay dividends, at least until such time as normal demand again obtains.

Roy L. Peck

Another LEADER in the Block Industry!

Dick Francis says:

"If it hadn't been possible for me to lease the first Besser Vibrapac, I would never have been in the block business."

★This is the 136th of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Today—This Progressive Cincinnati Plant Has a Daily Production of 45,000 Block

Reading Concrete Products, Inc., Reading, Ohio, started in the block business in 1947 with a single-block tamper having a daily capacity of 1800 units (8" or equivalent). Today, the company is Greater Cincinnati's largest producer of block with production stepped up to 45,000 units per day.

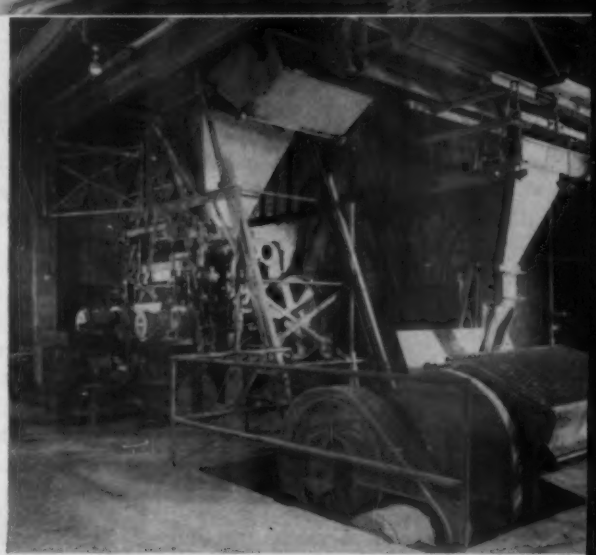
Besser Vibrapacs have been a big factor in the success of the company. The first machine was installed through the Vibrapac Agreement Plan. This proved so successful, five more machines were added from time to time...all through the Vibrapac Agreement...a plan that has enabled the company to keep up with the ever-increasing demand for concrete block. As Dick Francis, founder and spark plug of the company states: "The Vibrapac Agreement gives me working capital to expand and grow".

You, too, can make money with Besser Vibrapacs. Contact the Besser representative nearest you, or write directly to the factory for literature. There's no obligation.

BESSER Company

BOX 131 • ALPENA, MICHIGAN, U. S. A.

First in Concrete Block Machines



Five Besser Vibrapacs are now operating at the "Reading Rock" plants located at Newtown, Miamitown and Reading Road. A sixth Vibrapac is ready for installation in Reading Rock's new plant on Hamilton and Cincinnati Pike. These machines produce high quality units marketed with the trade slogan — "Reading Rock the Quality Block".

News of the Concrete Industries

● Some of the 120 mason contractors who visited the open house held at the Rocklite Company plant, Ventura, Calif., on October 20. Such informal get-togethers are among the best promotion efforts these groups can sponsor.

J. T. Pennachetti Named To Canadian Committee On Concrete Specifications

John T. Pennachetti, president of Thorold Concrete Block Company, Ltd., Thorold, Ontario, Canada, was recently named chairman of the sub-committee which will investigate and present specifications on concrete blocks and bricks. This body's recommendations will be submitted for the adoption of new Canadian standards by the Canadian Standards Association.

The sub-committee will examine various block products made throughout Canada and will study specifications. Later reports will be made to the general committee, which will modify the proposed changes in factors such as compressive strength, absorption, water content, aggregates, percentage of voids, face shell thickness, etc.

Laboratory-Office Building To Be Erected by N.C.M.A.

A five-acre tract of land in West Chicago, Ill., 29 miles directly west of downtown Chicago, has been purchased by the National Concrete Masonry Association as the site for a proposed laboratory and office.

Purchase of the land followed action taken by the N.C.M.A. board of directors to buy property and draw up preliminary plans and cost estimates for a laboratory. Sketches and cost figures were recently reviewed by the board and are now being revised. If approved, the project will be submitted to members of the association for final approval.

Plans call for 6,000 sq. ft. of laboratory space and 4,000 sq. ft. of office space. John D. Jarvis, A.I.A., Chicago, is the designer. Annexation of the land and necessary rezoning have already been completed, according to R. E. Copeland, N.C.M.A. director of engineering.

This laboratory will be the largest and most adequate given exclusively to research in concrete masonry.

Coming Events

January 16-17, 1957—Milwaukee. 36th annual convention, Wisconsin Concrete Products Association. Plankinton Hotel.

January 17-19, 1957 — Montreal. Annual convention, National Concrete Products Association. The Sheraton Mount Royal.

February 11-14, 1957—Los Angeles. 27th annual convention, National Ready Mixed Concrete Association. Statler Hotel.

February 25-28, 1957—St. Louis. 37th annual convention, National Concrete Masonry Association, and 10th biennial show, Concrete Industries Exposition. Kiel Auditorium.

March 5-9, 1957—Washington, D.C. 49th annual convention, American Concrete Pipe Association. Shoreham Hotel.

Red-E-Crete of Los Angeles Opens Sun Valley Plant As Part of Expansion Plan

The opening of new headquarters for the Los Angeles metropolitan area marks another move in the expansion plans of Red-E-Crete, Inc., pioneer manufacturers of pre-mixed concrete products. The new plant, located at 8401 Tujunga Avenue, Sun Valley, will enable Red-E-Crete to offer faster and more efficient service. The new Sun Valley plant will be used to warehouse raw materials and to provide enlarged sales and administrative headquarters.

B. A. Erickson, co-owner of the firm, emphasized that, although orders will be taken at the new plant, all pick-up and delivery will continue to be handled through the original Red-E-Crete plant, 1001 Aviation Drive, Glendale. No bagged Red-E-Crete products will be available at the new plant.

The Sun Valley facility is equipped with the latest warehouse machinery. Covered conveyor belts and special safety devices typify the modern handling facilities and cost-saving equipment used throughout the warehouse.

The Pine Hill Concrete Mix Corporation, Buffalo, N. Y., has purchased the Blasdell (N. Y.) Ready Mix Corporation. Pine Hill operates three other branch plants, located in Tonawanda, Lancaster, and Depew, N. Y. An extensive expansion is planned for the Blasdell operation, according to Pine Hill officials.

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Profits for you are the result of the National Car Shaker — profits derived from the fast, efficient, complete unloading of aggregates with only *one* operator.

The National Car Shaker combines low cost with the best engineering principles such as all-welded box girder frame, patented rubber-to-rubber motor mount, hardened bolts and nuts and triple V-belt drive.

Many years of trouble-free operation are yours with the National Car Shaker. The first one produced is still in daily operation after eight years of the roughest work.

Write for full information on the money-saving National Car Shaker today—right now.

NATIONAL CONVEYOR AND SUPPLY COMPANY

348 N. Harding Ave. Chicago, Ill.

Texas Block Producers Discuss Better Products At Annual Fall Meeting

The annual fall meeting of the Texas Concrete Masonry Association was held at the Del Camino Motor Hotel, El Paso, Tex., on October 15-16, 1956. Sixty members of the nine-year-old association attended the two-day gathering. The papers presented featured product improvement and the advantages of belonging to a local trade group, particularly because of affiliation with the National Concrete Masonry Association.

Officers elected at this meeting, who will take office after the spring meeting, include Nolan F. Brown (president, the Nolan F. Brown Company, Dallas), president, and and Harold Dodds Jr. (Texarkana Concrete Products Company, Texarkana), secretary treasurer. New directors elected include W. F. Smith (Black-Broiler, Inc., Houston) and F. L. Carmichael Sr. (Western Builders Supply Company, Fort Worth).

Carl A. Menzel, technical problems consultant, Portland Cement Association, Chicago, Ill., presented a paper entitled *How to Retain Our Market through Product Improvement*. Earl W. Peterson, president of N.C.M.A., spoke on *The Advantages of an Association*. Talks were also given by E. W. Dienhart, executive secretary, N.C.M.A.; Cedric Willson, chief engineer, Texas Industries, Dallas, who related how the N.C.M.A. and the local group were affiliated; and James D. Piper, vice-president for promotion, P.C.A., Chicago, Ill.

A visit to the block plant of the Atlas Building Products Company, El Paso, reportedly the largest plant of its kind in Texas, was a highlight of the first day. Cocktails and a buffet dinner at the International Club were followed by a sightseeing tour of Juarez, Mexico.

Congratulations were received by the Fischer Lime and Cement Company, Memphis, Tenn., on its 50th anniversary in business as a building supply firm. Annual production exceeds 1,000,000 units, which are distributed through 1,000 dealers.

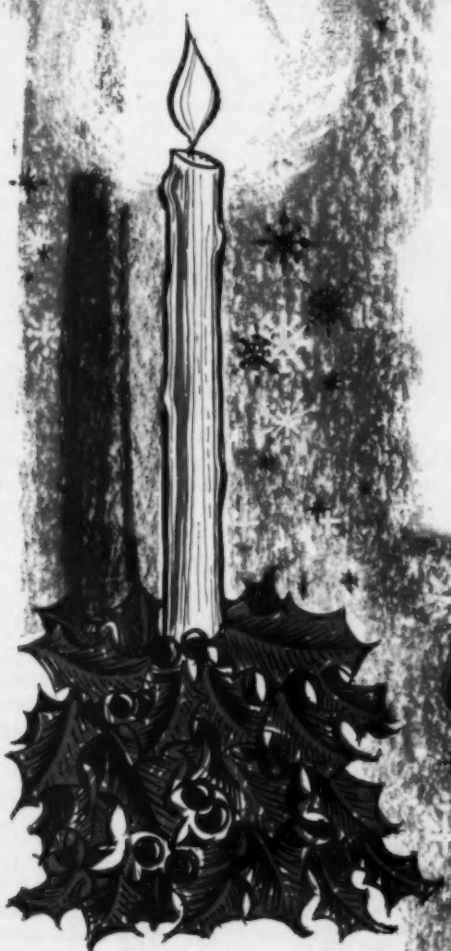
William Eichorst, Albuquerque, N. M., has been elected president of the New Mexico Concrete Products Association. Other newly elected officers are Don Strode, Las Cruces, vice-president, and William Derby, Roswell, secretary-treasurer.

ALL OF US AT COLUMBIA WISH YOU A . . .

Merry Christmas

It is our sincere wish that not only this holiday season be bountiful and happy, but that the many years to come will bring you continued prosperity, happiness and contentment. It is our wish, too, that the many friendships we have built in the industry may continue to prosper in an association of mutual trust and benefit.

We wish also at this time to thank our many friends throughout the industry for the patronage and consideration extended our firm throughout the past year. May we continue to merit your goodwill.



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World-wide Distributors and Manufacturers of Concrete Block Making Equipment

LEAP® CONCRETE

MODERN, ECONOMICAL, PROFITABLE - -

LEAP Concrete CANTILEVERS are LONGER!

Shown at Left: Prestressed Tee Joist roof with 25 FOOT CANTILEVER designed by L. L. Howard, Chief Engineer of Duro-Stress, Inc., a LEAP FRANCHISED prestressed products manufacturer.

If you want long, long, L-O-N-G SPANS, L-O-N-G-E-R CANTILEVERS write LEAP CONCRETE, INC., LAKELAND, FLA.

FREE—

LEAP Concrete, Inc. P. O. Box 1053
Dept. K-14, Lakeland, Florida

Send information about LEAP Prestressed Products; Franchise ☐, Double Tee ☐, Joists ☐, Beams ☐, Piling ☐

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ADDRESS _____

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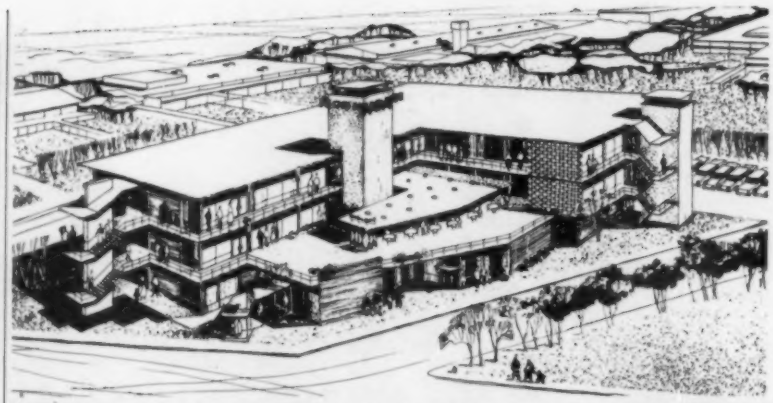
I am an: Architect ☐, Engineer ☐, Contractor ☐ We are interested in a LEAP FRANCHISE ☐



• The $1,000,000 three-story New Orleans Housing Mart, to be erected in a suburban location, has exterior concrete stairs and cantilevered galleries, enabling visitors to inspect displays behind glass window-walls at any time of day or night.

New DeVecchis & Sons Plant In Operation in McKee, Pa.

At McKee, Pa., the new plant of E. DeVecchis & Sons Concrete Products, Inc., recently went into operation. The company manufactures concrete building materials in all sizes from 2-in. slabs to 12-in. blocks.

Modern, high-production machinery includes a Besser Vibrapac which can turn out 900 blocks an hour. Modern loading facilities are also available, and the plant is equipped to deliver materials within a 75-mile radius. The firm has two other operations, located at Burnham and Mount Union, Pa.

Meet the Tetrapod Family— Wave-Stoppers to You

Strange-looking objects of concrete, shaped like giant jacks (the kind girls use in playing familiar games with a ball), are being utilized in widely scattered parts of the world to withstand the force of waves along ocean shores. Their rough concrete texture absorbs the maximum amount of wave energy, and their weight anchors them.

Dubbed tetrapods (four-footed), the out-size "jacks" were first developed at a hydraulic laboratory in Grenoble, France, by M. H. Marty, a French engineer. Each of the tetrapods weighs 25 tons, contains more than 12 cu. yd. of concrete, and is over 10 ft. high.

The first ones were used along the coast of Algeria, Tunisia, and Morocco. Approximately 1,630 of them will be dumped off Crescent City, Calif., by big cranes. They have also been installed off Fort Mansfield, in Texas.

The first American project to utilize tetrapods was in a Navy job off Rota, Spain. More recently they have been used at Nawiliwili Harbor on Kauai and at Kahului Harbor, Maui, T.H. The U. S. Corps of Engineers awarded the construction project for the Kahului port to the Hawaiian Dredging Company of Honolulu. Nix Ready Mix Company of Maui handled the other Hawaiian project.

At Crescent City tetrapods will also be placed along the seaward slope to protect the breakwater. They are being constructed under the supervision of the U. S. Army Corps of Engineers. Placing of the wave-stoppers will be a federal project.

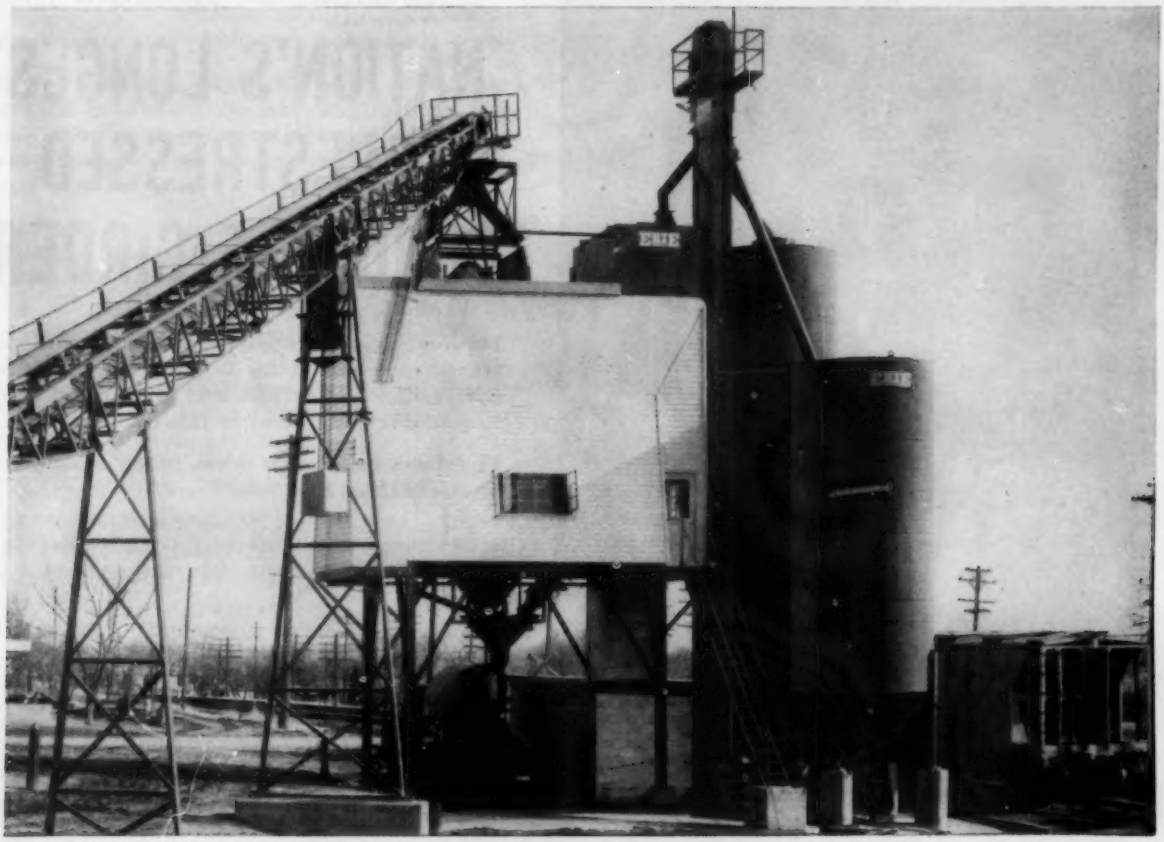
Our Cover Picture

• Pictured on our cover this month are Floyd L. Furnell, president, and Tom Moore, secretary-treasurer, Prestressed Concrete, Inc., Lakeland, Fla., admiring one of their new prestressing abutment walls. This structure is able to withstand a total horizontal force of 2,000,000 lb.—the greatest capacity yet developed. The plant was designed as the most productive and economical operation of any facility of its size. Beds are 422 ft. long, and can turn out pre-tensioned beams up to 125-ft. span.

Incorporation of the Dodds & Fountain Company, Greggton, Tex., has been announced by J. C. Fountain. The firm will now be known by its new name, Dodds & Fountain Building Products, Inc. A proposed expansion program includes the construction of a branch plant in Tyler, Tex.

Jose A. Ferre has been appointed president of Maule Industries, Inc., Miami, Fla. Mr. Ferre succeeds M. F. Pafford, who has resigned after 23 years of service with Maule. Mr. Ferre also retains his post as chairman of the board.

"WE CONSIDERED MANY PLANTS WE *CHOSE* AN ERIE AUTOMATIC BATCHER"



● REPORTS CLINTON KELLER, VICE-PRES. READY-MIX CORP. OF COLORADO SPRINGS

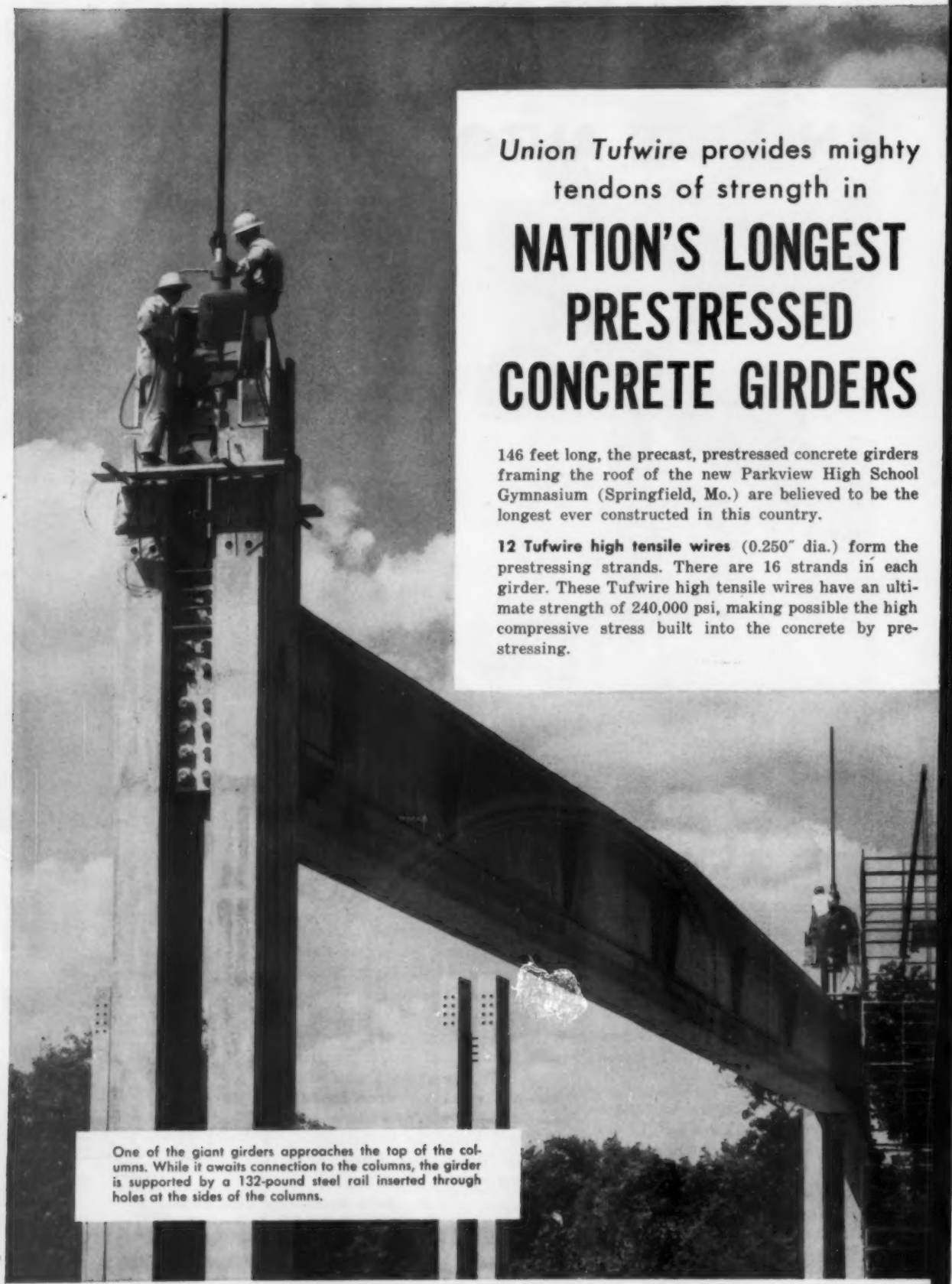
It takes some real doing to make a decent profit in the highly competitive ready-mix concrete business. You can turn out good specification concrete and still lose your shirt—unless top-quality goes hand-in-hand with efficient, high-volume production.

Ready-Mix Corporation took a long, hard look at these facts before buying a concrete batching plant. They selected the Erie plant, shown above, with AUTOMATIC controls for batch CEMENT AND AIR OPERATE GATES FOR AGGREGATE.

Here's what company officer, Clinton Keller, says about their fast working ERIE Truck Mixer Plant. "After considering a number of plants, we decided on an ERIE. We felt it would give us more concrete, faster, and would require fewer men to operate. Our ERIE plant has been in operation several months now. It's everything we thought it would be. We're highly pleased!" Before you decide, why not get the ERIE story.

Write for catalogs, Dept. C-126

ERIE STRAYER COMPANY
3126 GEIST RD., ERIE, PENNSYLVANIA



Union Tufwire provides mighty tendons of strength in

NATION'S LONGEST PRESTRESSED CONCRETE GIRDERS

146 feet long, the precast, prestressed concrete girders framing the roof of the new Parkview High School Gymnasium (Springfield, Mo.) are believed to be the longest ever constructed in this country.

12 Tufwire high tensile wires (0.250" dia.) form the prestressing strands. There are 16 strands in each girder. These Tufwire high tensile wires have an ultimate strength of 240,000 psi, making possible the high compressive stress built into the concrete by prestressing.

One of the giant girders approaches the top of the columns. While it awaits connection to the columns, the girder is supported by a 132-pound steel rail inserted through holes at the sides of the columns.

The giant girders are supported on unique twin concrete columns, and tied to them by prestressed rigid joints. The girders were cast and prestressed on the concrete floor of the gymnasium, and hoisted atop the columns by the same hydraulic jacks used for prestressing. Then strands providing the continuity of the joint between girder and columns were placed and stressed.

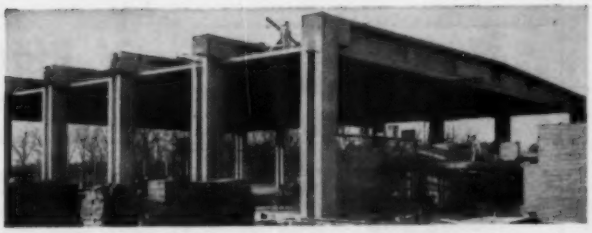
This new building impressively points up the advantages of prestressed concrete construction: longer spans, greater strength-to-weight ratio, lighter foundations and substantial savings in building time and costs.

Union Wire Rope Corporation's advances in developing better high tensile wire and strand helped open the way for the present trend to prestressed construction. Today we're supplying Tufwire Stress-Relieved Wire and strand for projects ranging from the world's longest highway bridge (over Lake Pontchartrain, Louisiana) and the nation's biggest highway-building program . . . right on down to light poles and farmers' fence posts. The jobs don't come too big or too small!

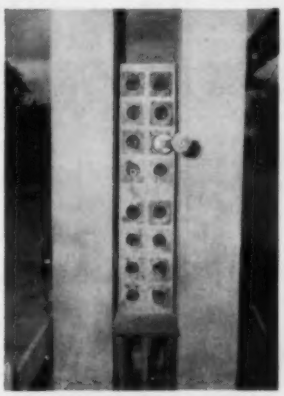
CERTAIN SUPPLY — PROMPT DELIVERY

That's what you're assured when you specify Union Tufwire wire and strand. The research and production facilities of Union Wire Rope Corporation have been geared to the seven-league strides of prestressed construction since the trend began shaping up a decade ago. Our expanding plant capacity and Mid-America location mean prompt service for your order.

Have a problem? Whether you're an on-site contractor or a permanent casting-bed operator—or want to explore the advantages of prestressed concrete in your field—get in touch with our engineering department and research laboratories. We'll gladly lend a lift with any prestressing problem.

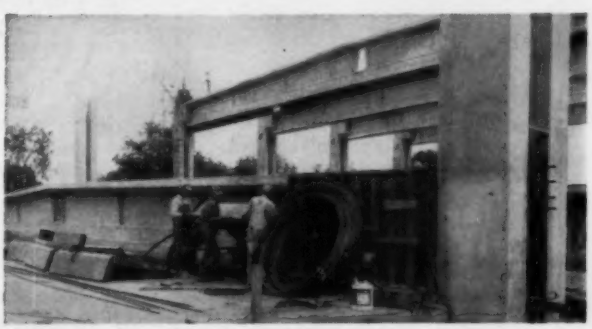


Precast channel roof slabs rest on the lower flanges of the girders, providing a smooth ceiling inside the building. You can see in this picture how continuity stressing rigidly holds columns and girders together.



The 16 prestressing strands are shown in position in the girder ready for post tensioning. The girders are seven feet deep at center, tapering to 5.5 feet deep at each end.

Holes formed by rubber cores in the end block receive the Tufwire strands with which the girder is joined to the top of the column by post tensioning.



Tufwire in coils ready for placing in the girder after removal of forms.

union

Tufwire

Stress-Relieved
Wire & Strand

Get this booklet now!

It's a comprehensive handbook that gives you important facts about prestressed concrete. Plus complete specifications and data on *Tufwire* as used in both pretensioned and post-tensioned prestressing. No charge.

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Specialists in high-carbon wire, wire rope, braided wire fabric, stress-relieved wire and strand.

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COMMENT
from the
BUTLER ENGINEER

. . . . Of New Developments and Unsound "Bright" Ideas

We're getting tooled-up for handshaking purposes with all of you at the Road Show (Chgo) and the Concrete Masonry Show (St. Looey). And our exhibits will be more than something.

The emperor-sized Highway Program has to be met with equipment not even dreamed of five years ago. And it's going to be. You can be sure Butler Bin will be up there with startling new developments. Right now developments in the Butler 0-1-0 Automatic Roadbuilders Plant make it easy for *one operator* to dish it up for *three* dual drum pavers. And he can casually reach for a cigarette at any time.

•

We live in the Milwaukee Braves country. Does anyone want a flock of blue World Series tickets to paper a room?

•

When I was in engineering school I was taught

(a) To analyze a given problem

(b) To find out what others had previously done about it.

There are a few manufacturers in the materials handling field who have forgotten to take step (b). And they are such johnny-come-latelys that they are unaware that what seems like a bright idea was tried and found impractical by some of us old timers 25 years ago . . . They simply haven't the background to venture into sound, practical research on the really new and important developments. But they do make trouble for themselves and their trusting customers. Be sure you buy from an established, reliable manufacturer.

With great sincerity

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

Of Plants and People

The J. P. Loomis Concrete & Supply Co., Akron, Ohio, has recently been appointed distributor of Cemesto structural insulating panels for the greater Akron area. Cemesto panels, manufactured by the Celotex Corporation, are 2-in. thick structural insulating units consisting of a core of Celotex cane fibre insulation board to which cement asbestos facings are laminated with a bituminous adhesive.

The Butler Lime & Cement Co., an affiliate of the Tews Lime & Cement Co., recently began operations at its new plant in Milwaukee, Wis. The new plant, described as the largest ready-mix plant in Wisconsin, has a capacity of 150 cu. yd. per hour. The firm is headed by Walter F. Tews, president.

William A. Cunningham has been appointed Philadelphia district manager of the Raymond Concrete Pile Company, New York, N. Y. Mr. Cunningham succeeds William A. Back, who has been appointed engineering consultant at the New York office.

Brig. Gen. B. B. Talley, U. S. Army (ret.), has been appointed project manager of foreign construction operations on the staff of the Raymond Concrete Pile Company, New York, N. Y.

Superlite Builders Supply Company, Phoenix, Ariz., has introduced a prefabricated, steel-reinforced block fence. Panels and posts for the fence are preassembled and delivered to the job for immediate installation.

Gerhold Concrete Products Company, Norfolk, Nebr., has installed a new ready-mix plant, constructed at a cost of $40,000. Just one year ago this firm built and put in operation its concrete products plant.

The Licking Ready-Mix Company, Newark, Ohio, recently purchased by Paul Kent and T. D. Barnhouse of Granville, Ohio, is now operating under the new name of Newark Concrete Ready-Mix. Mr. Kent is president of the new firm, and Mr. Barnhouse is vice-president and general manager.

SAVE MONEY!
UNUSED
6X6 ARMY TRUCKS

- **From Government Storage!**
- **Unused and Guaranteed!**
- **Factory New Condition!**
- **Reconditioned Trucks also Available!**

Save up to $3,000 on one of our unused Army trucks. See for yourself how TWO of our trucks cost you even LESS than *one* new truck.

Compare our Tandem Axle Trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere.

Investigate now! . . . There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery Write, Wire or Phone Collect—JAckson 5-7841
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CONSTRUCTION AND AUTOMOTIVE EQUIPMENT AND PARTS
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YOU TOO,
CAN MAKE OUT..
WITH THIS DRAIN TILE MACHINE.

WRITE:
CMC, INC.
DRAWER 60, HICKORY, N.C.

4 REASONS WHY...

MEEKINS INC. of Florida give the best block delivery service

PARTIAL LIST OF SATISFIED USERS

Bes-Block Concrete Products, Inc.
Jacksonville, Florida—3 units

Alico Concrete Products Co., Inc.
Patchogue, L. I., New York—2 units

The Ideal Builders Supply and Fuel Co.
Cleveland, Ohio—2 units

Binkley and Ober, Inc.
East Petersburg, Pa.—2 units

The Michigan Silo Company
Peoria, Illinois—2 units

Joseph M. Ripley, Inc.
Jacksonville, Florida—3 units

Carter's Concrete Block Plant
Monticello, Indiana

M. L. Dague Company
Muncie, Indiana

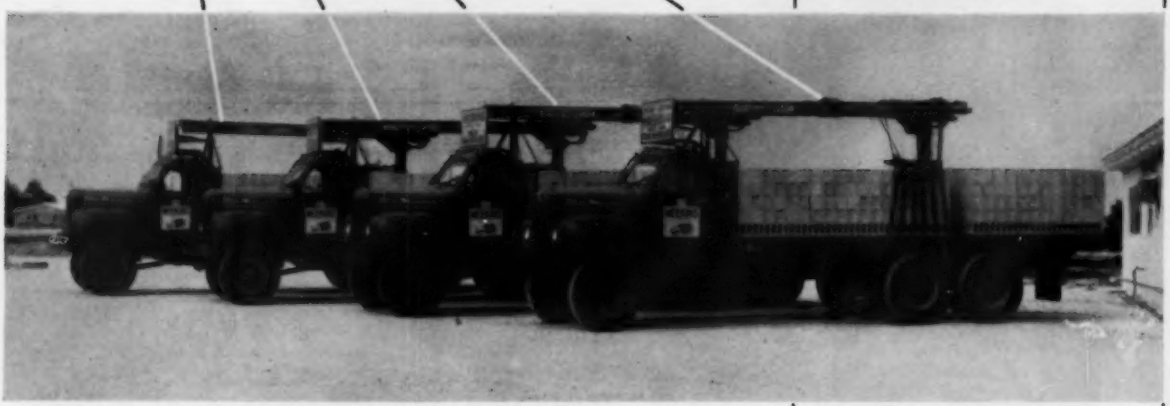
Pick's Pack-Hauler
Blue Hill, Neb.

The Fairlawn Supply & Coal Company
Akron, Ohio

Concrete Masonry Corporation
Elyria, Ohio—4 units

Fizzano Brothers, Inc.
Crum Lynne, Pennsylvania

Maule Industries, Inc.
Miami, Florida—2 units



4 SIDE-O-MATIC UNLOADERS *are now on the job . . . . . .*

Meekins, Inc., of Hollywood, Florida, a leader in the industry, tell us "There is no comparison between our Side-O-Matics and two other competitive makes of unloaders we have been using." They say, " . . . the Side-O-Matics excel in speed of unloading, ease of unloading on sloping terrain . . . no need for jockeying truck around in tight jobs as the entire load can be taken off from one position . . . keep labor turnover to a minimum and give better customer satisfaction."

Pat. Nos. 2,772,794 and 2,772,795

Write Today for full details

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Putnam Mason Supplies, Inc.
Carmel, New York

Peoria Concrete Construction Company
Peoria, Illinois

Nitterhouse Concrete Products
Chambersburg, Pennsylvania

Bestone Incorporated
Chardon, Ohio

The Plasticrete Corporation
New Haven, Connecticut—2 units

The Cleveland Builders Supply Co.
Cleveland, Ohio—3 units

Columbia Concrete Products Co.
Des Moines, Iowa

Park Avenue Cement Block Co., Inc.
Cranston, Rhode Island

Adolf Jandris and Sons, Inc.
Gardner, Massachusetts

Daggett's Concrete Products
South Haven, Michigan

Polyock Brothers
Zenda, Wisconsin

Atlas Concrete Products, Inc.
Flint, Michigan—2 units

David Concrete Products Company
Jacksonville, Florida—2 units

Carl Krebs
Fort Thomas, Kentucky

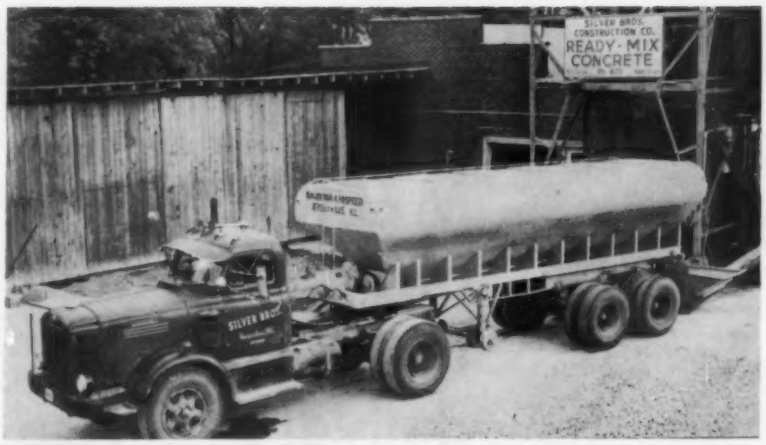
New Castle Duntile Company
New Castle, Pennsylvania

Foster Builders Supply Company
Port Huron, Michigan

Lima Cement Products Company
Lima, Ohio

A new concrete block plant, recently completed in Wilbraham, Mass., for Camosse Brothers of Auburn, Mass., will have a capacity of 7,000 to 8,000 blocks per day. The distribution agency is the Boilard Bros. Block Company.

Cinder Block, Inc., Detroit, Mich., has begun operation of a recently installed high-pressure-steam curing plant. As part of its expansion program, two new buildings were constructed at a cost of $500,000. The buildings house six steel autoclaves, 68 ft. long and 10 ft. in diameter, each weighing 60 tons.



• Silver Bros. Construction Company, Hoopeston, Ill., uses this Baughman Manufacturing Company's Model SST-11 trailer-mounted bulk transport body for moving material to the ready-mix plant. Newly designed for increased discharge speed and larger payloads, the Model SST-11 unloads by means of non-clogging 9-in. twin augers.

MARTIN *Packerhead*
CONCRETE PIPE MACHINE
RECOMMENDED FOR
VOLUME PRODUCTION OF
QUALITY PIPE*

Designed and produced by the pioneer company in conduit irrigation, the new MARTIN Model 56 brings the time-proven "Packerhead" process of concrete pipe production to a new peak of perfection. In addition to simplicity of operation, speed of production (from 4" to 24" pipe) and extreme ease of maintenance, the Model 56 provides pipe lengths up to 48", provides power-driven turntable and a 50 horsepower motor for its main drive.

*Harrell Gannaway, Owner-Manager of Concrete Pipe Co., Phoenix, Arizona, states: "We have used our Martin Pipe Machine for 10 years. Today it is still modern and in excellent condition. We are very pleased with its results."

For complete information write:

MARTIN IRON WORKS LTD.
P.O. Box 2857 TERMINAL ANNEX, Los Angeles 54, Calif.

Ready-Mix Plant Opened By New Phoenix Concern

Phoenix, Ariz., is the home of a new ready-mixed concrete firm which was established by F. W. Schammel and M. D. Crandall and organized under the name of the Valley Redi-Mix Company. In addition to ready-mix, the plant (formerly owned by the Monarch Material Company), will also distribute sand and other nonmetallic minerals.

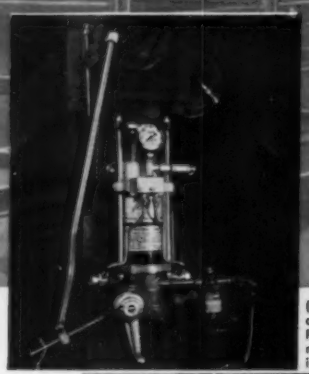
Mr. Schammel, the president of the new company, served for nine years as sales manager of the Arizona Sand and Rock Company. Mr. Crandall was also with the latter company, having been its secretary-treasurer for 14 years. Wayne Kempainen will be the manager of the new plant; he also was previously associated with the Arizona Sand and Rock Co.

The Atlas Building Products Company, El Paso, Tex., has erected a classroom for the instruction of bricklayer apprentices. Classes provide pointers on all phases of the masonry industry. Materials for the school are also provided by Atlas.

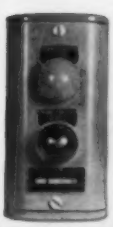
William C. Green has been appointed chief of the engineering department of Texcrete Structural Products Company, a subsidiary of Texas Industries, Inc., Dallas. Mr. Green was formerly associated with the Industrial Bureau of Standards, doing research on structural properties of lightweight concrete aggregate.

AUTOMATIC LUBRICATION!

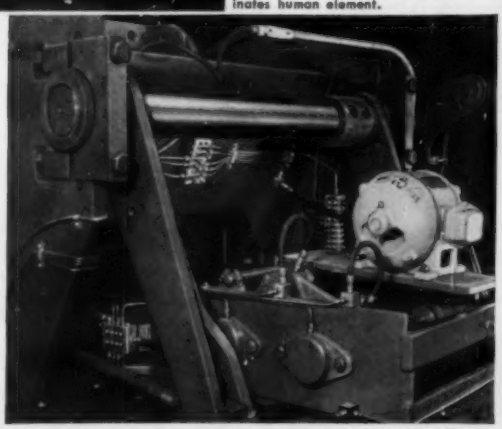
Another BESSER VIBRAPAC *Exclusive to Boost Block Production and Profits!*



(Left) Positive-feed pump mounted on outboard bearing support of VIBRAPAC machine. Starts and stops automatically with VIBRAPAC . . . eliminates human element.



Signal light indicator at pump. Shows all bearings have been properly lubricated.



Distributor function blocks with lubrication lines installed on VIBRAPAC. Shows master feeder assembly and ¼" tubing for automatic lubrication of bearings.

The Self-Lubricating VIBRAPAC cuts downtime...helps you produce more concrete block at less cost.

Throw away your grease gun! A Besser VIBRAPAC now lubricates itself . . . at regular intervals . . . *while it is running!*

No more downtime for lubrication! No lost man hours. No premature wear of insufficiently lubricated parts. And, no *over* lubrication. Instead, you get constant operation, smoother operation, vastly longer service from moving parts . . . with each bearing getting the right amount of lubricant at the right time, *automatically!* All this adds up to increased output at lower cost. And that's what you need to get a bigger share of today's heavy demand for quality block.

Of course, a VIBRAPAC has many other features that only BESSER can give you . . . more power . . . more production . . . smoother, high-speed operation . . . pin-point precision that assures finer block with greater output . . . rugged construction that provides many years of satisfactory operation.

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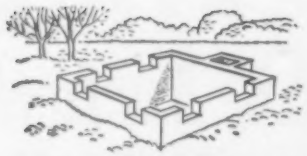

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- **Easy to handle and assemble.**
- **Saves time, material, money.**
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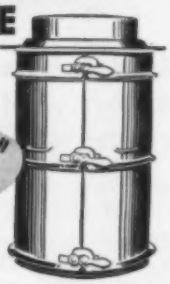

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● These two "before and after" views of the same area in California, on the southern outskirts of San Francisco, show how Californians build with concrete in a manner reminiscent of contour plowing. In the upper view work had not been long in progress on the 10,000-home-building project. The lower view shows how the stair-step homes follow the topography of this rolling terrain. Cupertino Concrete Company, utilizing a "batching-plant-on-wheels" procedure, underbid competitors and still made a profit by moving its equipment as the project progressed. Because of the mobility of the setup, this company reduced truck hauls and saved over 50 percent on hauling costs. The traveling plant also saves transit trucks.

A.I.A., Producers' Council Hold Literature Competition

The 1957 Building Products Literature Competition, sponsored jointly by The American Institute of Architects and The Producers' Council, Inc., is officially underway.

This annual competition has a twofold purpose: (1) to recognize building products literature and space advertising directed to the architect which is excellent for its technical and informative value and is of material assistance to the architect in the selection and specification of building products; and (2) to encourage building materials and equipment manufacturers to adopt a more technical approach in the preparation of building products literature and space advertising for architectural readership.

The competition is open to all manufacturers of building materials and equipment, to associations of such manufacturers, and to other firms which have technical literature of informative value to the architect.

Only product literature and space advertising published since December 31, 1955, will be considered.

Complete details on the competition may be obtained by writing to the Publications Department, The Producers' Council, Inc., 2029 K Street, N. W., Washington 6, D. C.

The equivalent of 800,000 standard 8- by 8- by 16-in. concrete blocks, enough for the building of 550 average sized, two-bedroom homes without a basement, was used in the construction of the 41-story Prudential Building in Chicago, Ill., according to the National Concrete Masonry Association.

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MOTO-MIXERS

Out in front of the Parade

It's more than a matter of pride. It's a deeply ingrained habit that makes Rex Adjusta-Wate Moto-Mixers the pace setter in truck mixer design. For Rex has the habit of leadership . . . the responsibility for the creative engineering that looks to tomorrow — today!

Today's truck mixers are a far cry from the machines of 10 or 20 years ago — far more efficient, more profitable to operate. And the responsibility for this progress has rested primarily on the shoulders of the leader — Rex! The design . . . the manufacture . . . the testing . . . the burden of introduction of the new and improved has been the price we pay for leadership.

Typical of the progress you expect from the leader is the Rex Front Engine Power Take-Off — Rex FEPTO — an innovation that ranks with the many Rex firsts — chain drum drive, three-point suspension, Adjusta-Wate design principle and others. This is a proven design for, as the leader, we can't afford to take a chance with your pocketbook. It's as far ahead in performance as any of the other Rex innovations that have meant

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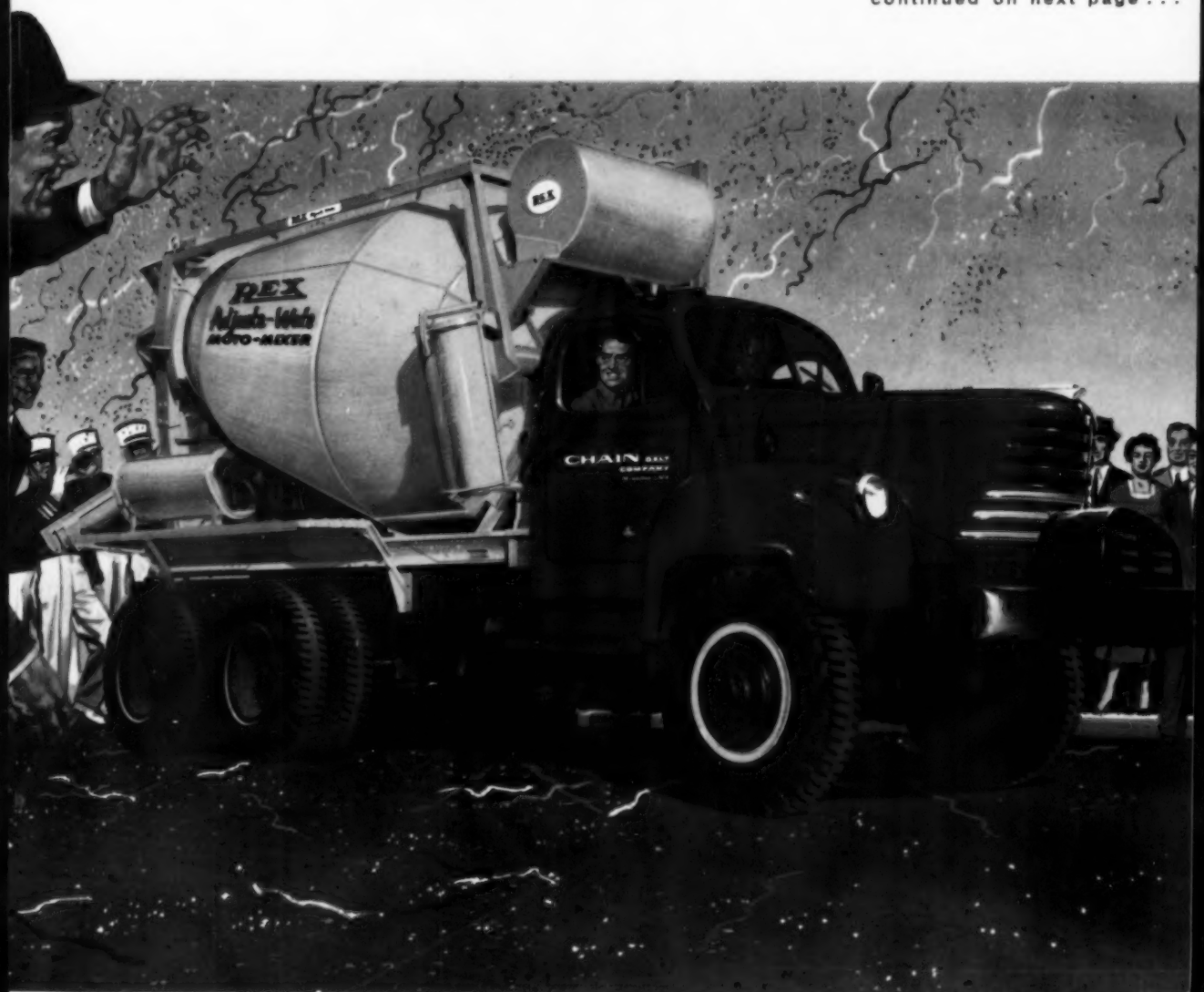

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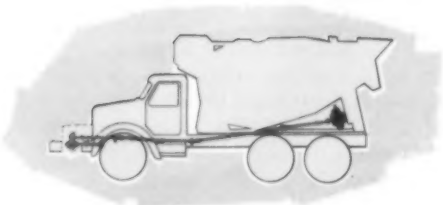
more profitable operation . . . better service to your customers.

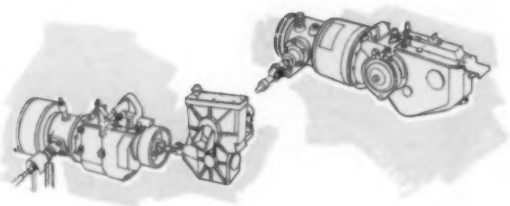
Rex FEPTO is another example of our ability to live up to our promise — "When you want to stay ahead of your competition . . . to give your customers the best in service and quality, look to Rex — for leadership."

And, of course, FEPTO is just one of the many values to be found in Rex Adjusta-Wate Moto-Mixers (R), the leaders in the truck mixer parade. For the rest of this story, see your Rex Distributor or write CHAIN Belt Company, Milwaukee 1, Wisconsin.

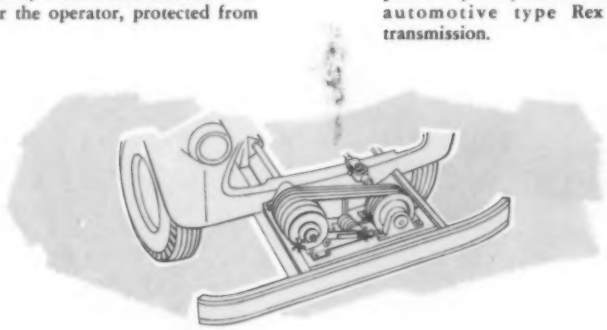
Rex FEPTO advantages are outstanding



Proper drive line location, inside the truck frame on the right, eliminating excessive angles and interference with steering column, brakes and transmission. Out of the way, safe for the operator, protected from damage and dirt.



Transmission option. Your choice of two transmissions. The heavy-duty Rex 202 two-speed transmission proved by 18 years of field service . . . or the new automotive type Rex 101 four-speed reversing transmission.



✻ **Electric disconnect clutch** permits disengagement of drum and drive lines through a switch in the cab. Ideal for emergencies, cold starting, curb or gutter pouring from cab, prevention of needless wear on return runs.

✻ **Automatic V-belt tension idler** provides exact belt tension at all times . . . flexes to absorb shocks. Automatic throttle control also protects engine and transmission from shock loads.

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Don't penalize your profits . . . Your local Rex Distributor can give you the facts on

ADJUSTA-WATE MOTO-MIXERS

LEADERSHIP . . . THROUGH CREATIVE ENGINEERING

CHAIN BELT COMPANY 4695 W. Greenfield Ave., Milwaukee 1, Wis.

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News of Manufacturers

Richard M. Ervin, an employee of the Hyster Company, Portland, Oreg., since 1951, has been promoted to manager of Hyster's Washington, D. C., office and district manager of the Company's East Central Industrial Truck Division. Formerly district representative of the Eastern Tractor Equipment Division, Mr. Ervin replaces Robert E. Lange, who has become resident manager of the Hyster wholly-owned subsidiary plant to open in Sao Paulo, Brazil.

As manager of the Washington, D. C., office, Mr. Ervin will represent Hyster's Industrial Truck and Tractor Divisions. As district manager, he will assist Hyster industrial truck dealers in the area.

Robert C. Shoemaker, supervising engineer of construction machinery at the Hyster Company in Portland for 12 years, has been promoted to the position of supervising engineer, patents and product analysis. In his new assignment, Mr. Shoemaker will devote full time to Hyster patents and trade marks and the investigation of proposed new products.

T. Richard Hazel, supervising engineer of Hyster's Tractor Equipment Division, has been assigned the added responsibilities of supervising the Construction Machinery Design Section. Mr. Hazel has been with Hyster since 1946.

The Besser Company, Alpena, Mich., which manufactures the Besser Vibrapac and complete equipment for concrete block plants announces the distribution of its new *Block Masonry Homes Plan Book.*

This book, containing 225 home plans, is one of Besser's many cooperative projects used in the firm's advertising program in conjunction with Vibrapac block makers.

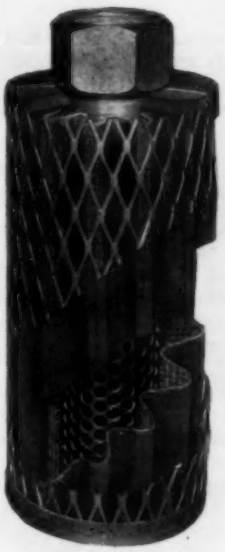
Herbert D. Sullivan, vice-president and general manager of the Central Pre-Mix Concrete Company and the Union Sand and Gravel Company, Spokane, Wash., died recently. Mr. Sullivan, widely known for his knowledge of the concrete industry, was active in the American Concrete Institute and the American Society of Testing Materials.

More and More Manufacturers are Installing

MARVEL SYNCLINAL FILTERS

AS STANDARD EQUIPMENT

Manufacturers of hydraulically actuated equipment and others with low pressure liquid circulating systems demand their equipment to perform consistently with all the productive efficiency they build into the machine that bears their name. Since these systems must be kept free of damaging particles, the selection of a filter is an important factor. Here are some of the outstanding reasons for the increasing preference for Marvel Synclinal Filters to do this all-important job!



SUMP TYPE (cutaway)

BECAUSE . . . Marvels are designed to give maximum ACTIVE filtering area rather than total filtering area. Only ACTIVE FILTERING AREA COUNTS!

BECAUSE . . . Marvels greater storage space for filtered out particles allows longer periods of "production" time at absolute minimum in maintenance cost and "down-time."

BECAUSE . . . Marvels can be disassembled, cleaned and reassembled by any workman in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connection.

BECAUSE . . . Marvels are protected and of sound construction to give long life and efficient filtration. THEY MEET J. I. C. STANDARDS.

BECAUSE . . . Marvels (Both Sump and Line Type) are available in individual capacities from 5 to 100 G.P.M. and choice of mesh sizes ranging from coarse 30 to very fine 200, they get a filter to fit their specific requirements.

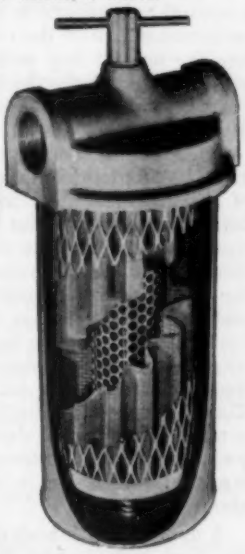
BECAUSE . . . Marvel not only delivers a top grade filter in both quality and performance, but delivers IMMEDIATELY—shipments are made the same day orders are received, if desired.

FACTS—NOT CLAIMS

Engineers decide on the basis of the record, on the basis of measurable facts rather than claims of the "campaign promise" variety. Here is a fact with meaning—

OVER 700 O. E. M.s

install MARVEL Synclinal FILTERS as Standard Equipment!



LINE TYPE (cutaway)

For Dependable Protection on All Hydraulic and Low Pressure Systems Investigate

MARVEL SYNCLINAL FILTERS

FILTERS FOR FIRE-RESISTANT HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of fire-resistant hydraulic fluids.

WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

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MARVEL ENGINEERING COMPANY

7227 N. Hamlin Ave., Chicago 45, Ill. PHONE: JUniper 8-6023

PQ-12

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated —

- ☐ Catalog #107—For Hydraulic Oils, Coolants, Lubricants
- ☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
- ☐ Catalog #400—For Fire-resistant Hydraulic Fluids (Synthetic)
- ☐ Catalog #301—For Water

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Prestressed Concrete Structures . . .

By FELIX RAMSEY*
Wyoming County Superintendent of Highways
Warsaw, N. Y.

FIVE or six years ago if you were to mention "prestressed concrete" to most engineers, they would look at you with a blank expression and say "What in the world is prestressed concrete?" Today there are few people who have not at least heard of prestressed concrete.

For the benefit of those who may not have much experience with it, it might be well to give a brief description of what it is and what it does. Reinforced concrete is designed so that the steel reinforcing takes up all the tensile stress, since concrete has no usable tensile strength. This means that in the design the reinforcing is placed in the bottom of the structure, and then enough cover is added to hold the steel in place.

When the forms are removed in ordinary reinforced concrete, the reinforcing actually goes into tension; but as the steel is stressed, it stretches enough to cause the lower section of the member to be in tension. The upper part of the concrete is, of course, in compression; and between the upper and lower parts there is a neutral axis neither in tension nor compression. All of the concrete below the neutral axis only serves as a "plaster" to hold the reinforcing in place and adds so much dead weight to the structure.

Before the turn of the century engineers had considered the possibility of holding the reinforcing in stress before the concrete was poured, so that all of the concrete would be in compression. As a matter of fact, the first patents for prestressed concrete were taken out in the United States in 1886; but no practical system was developed, mainly because the proper steel was not available. Today the steel generally used has a tensile strength of about 250,000 p.s.i., compared to ordinary reinforcing steel, which has a strength of about 40,000 p.s.i.

A number of methods of prestressing have been devised, but the type used entirely by Wyoming County is the Freyssinet system, which has been widely used in France for many years, with excellent results. It does not require any special prefabrication and can be used by any reasonably intelligent crew with the minimum of training.

There are, of course, two types of prestressed concrete — pre-tensioned and post-tensioned. Pre-tensioning requires a rather elaborate and somewhat costly setup but it is much more economical if quantity production is required. Usually twisted cables several hundred feet or more in length are tensioned, and forms for a number of sections are set up around the cables with headers placed at intervals. After the concrete has hardened, the cables can be cut between the ends of the sections. Thus many short beams or other sections can be poured economically at one time, with one cable tensioning.

In Wyoming County we have almost entirely used the post-tensioning method. In this system the cables of 12 wires each are hung in the forms in a flexible sheath and must, of course, pull back and forth easily after the concrete has been poured around the sheath and hardened.

Lately we have found it just as easy to cast a plastic hose into the beams and pull it out after the concrete has hardened. We then thread the cable into the hole left by the hose. After the concrete has attained a compressive strength of 5,000 p.s.i., anchors are put on each end of the cable and the cables are stressed. A special jack which develops a stress of 45,000 to 50,000 p.s.i. is used for the stressing. Only one jack is needed, but it is sometimes desirable to pull the cables from each end at once with two jacks if the cables are rather long.

The anchors are in the shape of a cylinder, with a conical hole along the axis. The cable is put through the conical hole, and the plug is then inserted with the wires fitting the flutings of the plug. As stress is put on the cable, the anchor plug is drawn into the hole on the far end of the cable.

The stressing jack consists of two parts. The outside part stresses the cables, and the middle part then pushes the anchor cone into the cylinder.

In many instances, when representatives of a state or a municipality decide to use prestressed concrete, they are naturally a bit cautious and unfamiliar with the possibilities it offers. Instead of designing the entire structure of prestressed concrete, they will use only beams of prestressed concrete and a decking of conventional materials. When arc-welding was new, there was a tendency to design the article exactly as though it called for rivets, and then arc-weld it. When the structure was finished, the workers did not trust the welding entirely; so they would put rivets into it, which usually weakened the article.

The practice of using a composite design of prestressed concrete with some other material usually results in adding considerable unnecessary dead load to the structure and because it is usually more difficult to build, adds to the cost. I think that in the relatively few cases where prestressed concrete has been tried and found to cost as much as or more than other types of structures, it was because these were not designed as completely prestressed units.

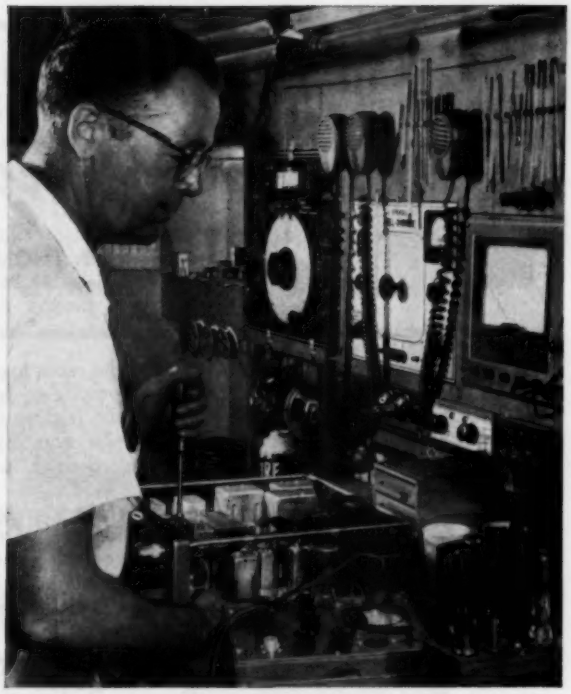
One remarkable thing about prestressed concrete is the fact that a section of flooring or decking can be made thinner than with any other type of construction. Before World War II we rebuilt a certain bridge. We were interested in getting the thinnest possible deck, because the width and depth of the river channel were so restricted that they often caused serious flooding. With welded beams we were able to span the 25-ft. channel with a deck depth of 19 in. as the minimum. Using prestressed concrete, since that time, we have twice spanned 40-ft. channels with a deck thickness of only 17 in.

Prestressed concrete also lends itself to precasting, where it would be impossible with ordinary reinforced concrete. One of the bridges built was supported with four 52-ft. T-beams. These were cast in a single form, and headers were placed at

(Continued on page 232)

* This paper was presented at the National Conference of County Engineers and Officials, held at Mackinac Island, Mich., September 17-19, 1956.

TYPICAL GENERAL ELECTRIC AUTHORIZED SERVICE STATION is Lane's 2-Way Radio Service in New London, Conn. Owner Al Lane has been in electronics service for over 30 years—now provides maintenance for more than 200 customers' mobile units.



MOBILE TWO-WAY RADIO SERVICE SHOP, completely equipped, that Lane uses for fast, efficient servicing on two-way systems. Lane's preventive maintenance program includes monthly checks on all mobile and base station units—of all makes.

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General Electric Authorized Service Stations are independent local businessmen, factory-trained to maintain your two-way radio system's full-time operating efficiency at the lowest possible cost.

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Licensed Experts. To be franchised as a General Electric Authorized Service Station, an independent operator must be fully licensed by the Federal Communications Commission to perform checks and maintenance on radio communication equipment. He must have the highest reputation in the community for fair dealing and good workmanship, and must carry adequate stocks of factory parts to assure quick repairs in emergencies.

Once franchised, General Electric Authorized Service Stations are enrolled in a continuing program of service training. In addition to factory-training sessions, all stations are regularly supplied with latest maintenance instruction manuals, bulletins, and hints on servicing all makes of two-way radio equipment. Also, General Electric employs highly skilled Communications Engineers in major cities, experts who are immediately available to any independent Authorized Service Station, or customer, for consultation on any communication problem.

FOR SALES AND SERVICE see "Radio Communication Equipment" in your Yellow Pages. Or, write: *General Electric Co., Communication Equipment, Section X51126, Electronics Park, Syracuse, N. Y.* In Canada, write: *C.G.E. Electronics, 181 Lansdowne Avenue, Toronto.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

R/ Ready Mix

By HARRY F. THOMSON
Consulting Engineer, St. Louis, Mo.

Imagineering

SOME years ago the monthly news-letter issued by a certain large metal refining company suggested that the term "imagineering" described the application of imagination to the engineering of new or improved uses of that company's line of ingot and sheet products. One of the notable features of the English language is the possibility of expansion by the addition of new words which carry a meaning not conveyed by terms used previously. So it appears that we may accept "imagineering" as a useful addition to our vocabulary, just as we think of "ready-mix" as an improvement in the field of building materials.

A good friend of the writer, now deceased, who made his mark in construction as a national president of the Associated General Contractors and an *honorable* member of the American Society of Civil Engineers, always contended that the fact a certain operation is conducted in a certain way is no proof that that is the best way. In other words, he held that we should always be looking for better ways of doing whatever we may be doing. The following remarks represent a degree of imagineering applied to certain features of equipment now used in handling ready-mix.

Mixer Capacity The matter of safe mixing capacity of a given mixer-drum has been a controversial subject in recent years. Some inspection agencies have declined to recognize the revision of the specification for truck-mixers which approved loading to ½ cu. yd. above the original rated capacity named by the manufacturer, provided the manufacturer certified that the drum would satisfactorily mix the increased batch. The extensive tests conducted by the National Ready Mixed Concrete Association proved satisfactory mixing of the rated load plus ½ cu. yd. was accomplished by the current designs of the leading mixer drums. But the certification by the manufacturer regarding a unit's ability to mix the additional ½ cu. yd. has been a left-handed approach to the rating problem. As the field experience since this specification revision has proven that present mixers can safely handle the extra ½ cu. yd., it is time for a forthright further revision permitting the manufacturer to issue a rating plate to include the extra ½ cu. yd. for all mixers, new or old, which he certifies will handle that size of load.[1]

More Mixer Sizes A related matter concerning mixer drums is the limited number of sizes now recognized as "standard" by the Truck Mixer Manufacturers Bureau. The attention now being paid by producers to the limitations of weight on front and rear axles has indicated the need for several sizes to be added to the present list of standard sizes. This feature could also be considered for improvement by the Manufacturers Bureau.[2]

Drum Revolutions In connection with the operation of truck-mixers it has been pointed out in this column previously that the A.S.T.M. specification for ready-mix, designation C94-55T, provides that not more than 100 revolutions of the drum shall be at mixing speed, and that revolutions after 100 shall be at agitating speed (which is defined elsewhere as 2 to 6 r.p.m.). Although this provision was drawn up by a sub-committee of specialists (which did not include any producer of ready-mix), and was approved by the full C-9 Committee on Concrete and Concrete Aggregates, the requirements as to speed and number of revolutions may not be the best answer to the problem of assuring adequate mixing. The requirements are difficult to administer, especially on hauls of over 15 minutes, as for most mixer bodies now in service the reduction from mixing to agitating speed is accomplished by the driver as follows: stopping his truck, dismounting from the cab, adjusting the drum speed by engine throttle or by gear shift or by both, and then returning to the cab and starting the truck again. Frequently the driver does not do this but continues down the street with the drum turning at mixed speed—in violation of the specification under which the load was probably certified. If the aggregate is not exceptionally hard, the continued grinding action serves to produce additional fines, which require more water, and throws the design of the mix out of line.

The question may be asked—is it necessary to change the speed of the drum if the total number of revolutions is limited? This has been discussed objectively among ready-mix producers, and all are agreed that administration of the specification would be simplified if a single drum speed were permitted. Also, a single-speed transmission could be used which would reduce weight and cost as compared to the 2-speed and 3-speed transmissions some manufacturers are furnishing. Some data are available which suggest that the number of revolutions is a more important factor than the speed of turning in accomplishing good mixing. The gross number of revolutions should probably be greater than the present combined limit of 150, but whether the number should be 300 or 400 or 500 has not been indicated. Additional test data on this point are badly needed.

Separate Engine Drive The whole problem of motive power for driving the drum deserves continued study. The arrangement which has been used most widely to date has included a gasoline engine, separate from the truck engine, which drives the drum through a clutch and transmission. This power unit is usually mounted on the frame along with the drum. This type of assembly has been favored by several of the mixer manufacturers because it can be furnished completely assembled, ready to be set on the truck chassis and secured in place. However, one of the shortcomings has been inability of the

[1] Subsequent to the preparation of this article (by Mr. Thomson) the Board of Directors of the National Ready Mixed Concrete Assn. approved recommendations on these topics, made by the Truck Mixer Manufacturers Bureau, as reported in CONCRETE MANUFACTURER, October, 1955, page 162.
[2] Ibid.

driver to adjust the drum speed without leaving the cab.

P.T.O. Drive Another method of drum driving which has been favored by several large producers has been through a power-takeoff driven by the truck engine. The p.t.o. or auxiliary transmission should be connected to the engine shaft ahead of the truck clutch so that the drum can be turned independently, whether the truck is moving or not. With the control levers of the p.t.o. carried into the cab, the driver can easily control the speed and direction of the drum. This is difficult to obtain with a separate engine drive. But the installation may require special engineering to fit the p.t.o. and its transmission into the chassis. The job of working out and installing this assembly usually falls to the purchaser.

A further complication is introduced when the drum is to be driven at the rear end; in such a setup it may be necessary to mount the p.t.o. at the front of the engine, with a jack-shaft across to one side and then back along the frame. Two chassis with this type of drum-drive were exhibited at the 1956 N.R.M.C.A. show in Chicago. But in spite of the manifest complications of installing a p.t.o. drive there appears to be a growing interest in this type on the part of several major producers, due largely to the economy resulting from the elimination of one engine.

Hydraulic Drive Several efforts have been made to use other mechanical means of driving the mixing drum. One was a hydraulic system, using a combination of compressor and motor, with oil as the liquid medium. This arrangement appeared to work well with loads of 2 to 3 cu. yd., but with larger loads there was difficulty in cooling the volume of oil needed for the power transfer. The immersion of an oil-cooling coil in the water tank carried on the truck has been suggested, but that does not appear to be a fully satisfactory answer. This type of drive offers flexible and convenient control of the drum speed by the driver. Further development may overcome present limitations.

Electric Drive Several years ago there were reports, presumably reliable, that an electric motor-generator drive for drums had been applied to several ready-mix trucks in one Northwestern city. The writer does not know of any recent word as to the success of that installation. However, such a method of drive could have a speed range about as flexible as that mentioned above for the hydraulic type. As the motor-generator type of drive is now used extensively in the propulsion of ships, it would appear to have possibilities with ready-mix drums, although the weight of electrical equipment may be excessive. Both electric and hydraulic drives may warrant energetic investigation.

Moisture Tests The problem of speedy determination of moisture in aggregates, especially sand, is the hardy perennial of the ready-mix operation. The widely used method drying by heat is cumbersome and requires so much time that a result is often "out-of-date" before it is available. Various other methods are used, such as displacement, electrical resistance, pycnometer, and generation of carbide gas; but none has been fully satisfactory. The development of a fast and reliable method of moisture determination also requires investigation.

Observing Workability The objective of making moisture tests is to control the workability of the concrete. A simple method of observing the workability

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CONCRETE PRODUCTS MACHINERY SINCE 1925

of a batch while it is in the mixer is a prime need of the concrete industry. Different methods suitable have been proposed for horizontal and for tilting types of stationary mixers and for truck mixers. Various operating companies have installed certain equipment in their trucks, with reasonable satisfaction. But no universally applicable method has been developed thus far; such a method is badly needed. A reliable check on the workability of a batch while it is in the mixer would obviate the continuous tests of moisture in the sand because the mixer operator could make minor adjustments of water to insure uniform workability in successive loads for a given job. Only periodic tests of moisture would be needed to verify compliance with any specification requirement. The best brains of the equipment manufacturers and of the operating men of the industry could well be directed toward developing a better means of handling the water-content problem than is now available.

The foregoing are some of the points in connection with ready-mix production, which thinking along the lines of "imagineering" bring to mind. Additional points, including batching equipment, water tanks, pumps, shapes of bodies, mixing blades, and other items will be discussed in coming issues.

Building Code for Midwest Sponsored by Conference Of Building Officials

A new building code designed to meet requirements and climatic conditions of the Midwest states will be issued early in 1957.

The Midwest Conference of Building Officials, with headquarters in Indianapolis, is the sponsoring organization. John V. Gallagher, executive director, in announcing the new code, stated it would be available to cities and communities of the Midwest states for adoption around January 1. A draft of the new code, as submitted by the Building Code Committee, was approved by the general membership of the conference at the recent annual meeting held in Chicago.

Mr. Gallagher said the new code, to be known as *Volume I, Midwest Building Code,* will contain provisions for regulating the construction of buildings of all types and occupancies based on minimum requirements. He indicated that it will be simple in form, assuring ease of administration and understanding.

Development of the new code was undertaken in 1955 by the organization as a result of numerous requests from Midwest cities and conference members for such a code. The Midwest Conference of Building Officials, a service advisory organization to communities and cities of the Midwest states, serves Ohio, Kentucky, Indiana, Michigan, Illinois, Wisconsin, Iowa, Minnesota, North Dakota, South Dakota, Missouri, Nebraska, and Kansas. It is one of four such organizations serving the cities of the nation and sponsoring model building regulations.

In 1955 the conference issued both a building and plumbing code for one- and two-family dwellings. These two codes are in wide use throughout the Midwest states. According to Mr. Gallagher, codes developed by the conference are under constant revision to meet changing requirements and to provide for and permit the use of new materials and current construction techniques. Revisions are made annually to the provisions of the codes through committee activity, subject to ratification by the membership of the conference after thorough study as a function of the annual convention.

Reprints of the codes containing the new revisions are issued every two years.

Oregon Unit Masonry Assn. Sponsors Pre-Packaged Units

Use of pre-packaged masonry units to reduce the costs of handling bricks and concrete blocks on the job was demonstrated to members of the Unit Masonry Association of Oregon recently by R. F. Thornburg, Portland mason contractor.

The demonstration, at Milwaukee, Oreg., was a part of a program in which the association hopes to acquaint local brick and concrete block manufacturers, mason contractors, bricklayers, and masons with the new development and to encourage its adoption by the construction industries.

In the new method, units of 100 bricks are banded together with wire strapping at the factory. Paper inserts are used between layers and on the outside corners of the units to protect them from wear and abrasion.

The bricks are hauled to the construction site and carted to the bricklayers' scaffold in the packaged units. There the strapping is cut and the bricks are ready to put in place. Concrete blocks, packaged 12 to a unit, are handled in the same way.

Special carts and hoists, designed to handle the 100-brick or 12-block units, are used to carry them from place to place on the job.

Mr. Thornburg, the first contractor in this area to try the pre-packaged bricks, said that the new system is a vast improvement over the old way of handling bricks with hand tongs and wheelbarrows. "With tongs a man can handle only seven bricks at a time. Concrete blocks are handled one at a time. It is easy to see that the packaged units will reduce in-the-wall cost of masonry construction by simplifying handling and eliminating damage from abrasion.

"Manufacturers also should be able to save money by handling bricks or blocks in large units, both at the plant and in loading them for delivery to the job," he said.

Efforts of the Unit Masonry Association of Oregon are directed at co-ordinating the adoption of the new system by both manufacturers of masonry products and mason contractors.

Material Service Enlarges Facilities at Highland Park

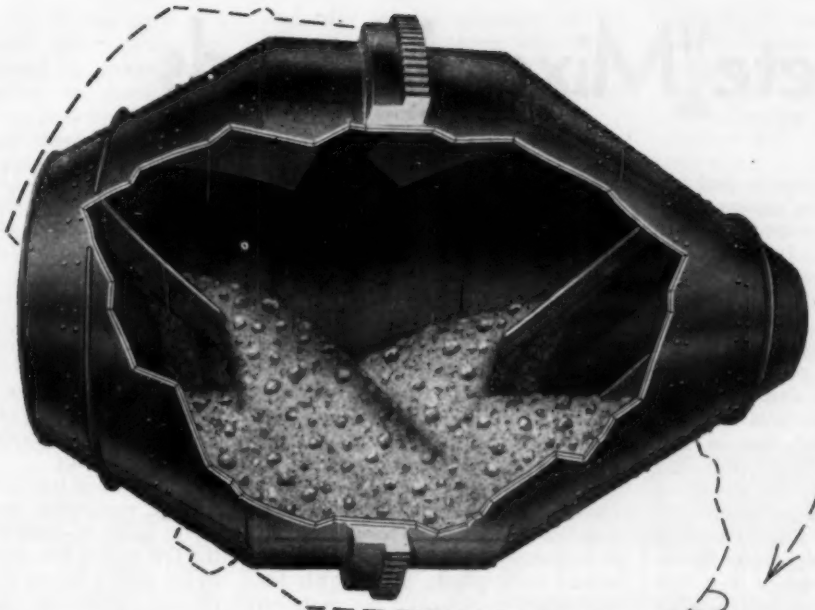
Officials of Material Service Corporation, Chicago have announced a new addition to the firm's recently acquired ready-mixed concrete yard No. 31 at Deerfield Road an Route 41, Highland Park.

The company has purchased facilities for distribution of building materials from the Highland Park Fuel Company. A full line of construction materials will be stocked, including concrete, masonry, brick, plaster, and other related supplies.

Approximately 50 percent of the total volume of a single concrete block consists of cores or air space, according to the National Concrete Masonry Association. Reduced weight, lower heat conductivity, and easier handling result from this design.

Tests conducted by the University of Illinois show that lightweight concrete block will absorb about 50 percent of sound in a room. Any material which deadens sound to the extent of 15 percent is regarded as a useful acoustic aid.

Concrete block accounts for nearly three-fourths of the total masonry wall volume in the United States, according to a report made by the National Concrete Masonry Association. Annual production of concrete block has increased 400 percent in a little more than 20 years.



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Concrete Mixer Hazards

THE concrete mixer is perhaps the most perilous, sinister-looking piece of equipment in a concrete block plant. Its huge steel blades churn the wet mix with a rhythm foreboding disaster to anything caught in their path. The sinister appearance is not illusory.

An experienced concrete plant superintendent once stated that on each of his many projects he lived with an ever-constant fear of two possible happenings: (1) that his batching plant might be destroyed by fire, or (2) that a concrete mixer might some day be started with a worker inside it. Vigilance in inspection and maintenance were this man's defense against fire, but he had no "pat" solution to allay his fears of the second possibility. Although he provided maximum protection against the chance of a mixer accident, he could have complete assurance that this would not happen only if all of his employees felt the same concern for this hazard. With signs, rules, threats, posters, and preachments he waged a continual campaign. Your N.C.M.A. Accident Prevention Committee urges all members to survey their own mixer safeguards, and initiate a similar campaign.

There are three major hazards connected with the operation of a concrete mixer:

1. The possible injury or death of an employee engaged in cleaning or repairing a mixer at the time it is turned on.

2. The danger zone in the area around unguarded motor shafts, drive pulleys, and the belt of a running mixer.

3. The rotating blades of a running mixer, especially when its operator is taking frequent hand samples from it for closer examination.

The accidental starting of a mixer in which an employee is working indicates carelessness and a lack of respect for the safety of others. Proper training of employees, both with respect to machine operation and safety, is essential to the reduction of this type of accident. Precautions which will aid in this program include these measures.

1. Install electrical switches so that there is no possibility of confusing them with those of any other piece of equipment. This is especially important if there are two or more mixers in a plant. The switch for one mixer might easily be mistaken for that of another in the same general area.

2. Establish and enforce this safety rule: *No one shall enter a concrete mixer until its switch is off and positively locked or guarded.* If a mixer is shut down for a brief period, an employee may be posted at the electrical switch to keep anyone from turning it on. For shut-down periods of longer duration, electrical switches should be locked in the off position by one of several means.

Special lock-out type switches are available which require a special key to turn them off and on. This type of switch is sufficiently safe, providing the key is removed after it has been turned off, and providing there are no duplicate keys in the hands of irresponsible persons.

Most switches can be locked out by means of the type of device shown in Fig. 1. Handle-operated switches can be equipped with an extension which permits locking by padlock. The repair man or maintenance man should keep the padlock with his personal equipment. Duplicate keys for such padlocks should be kept under strict control, generally of the plant superintendent or the owner.

These suggestions are positive methods of locking out a concrete mixer. Colored tags placed on the switch, a shunt placed across the switch terminals, and the removal of line fuses all serve as warnings that some one is working on the line; but these are not positive protection against accidents.

An electrical maintenance man on a large concreting project had the safety habit of removing fuses from the line switch box and putting them in his pocket before starting to work on any equipment. His system was quick and appeared foolproof since only the electricians had access to spare fuses. Top priority for repair on this job was always given to three short blasts from the whistle atop he concrete batching plant, since a breakdown here meant complete work stoppage and possible loss of a concrete pour. One night this electrician dashed into the batch plant, replying to an emergency call, removed the fuses from a switch box servicing a discharge gate on one of the large aggregate hoppers, and proceeded to search for the cause of smoke from a control solenoid. Minutes later a second electrician hurried into the plant in answer to the same call, quickly diagnosed the trouble as lack of fuses, placed two in the empty switch box, and promptly buried his co-worked with three tons of aggregate.

Too much emphasis cannot be given to the fact that *guards* are a part of the mixer and *must be replaced before a repair job can be considered complete.* Injuries from

Fig. 1—"Lock-Out," a sturdily constructed safety device, eliminates costly, inadvertent damage to vital equipment. The holes permit six persons to place locks on a unit after a switch or valve is closed, preventing the unit from being operated until the last workman has removed his lock.

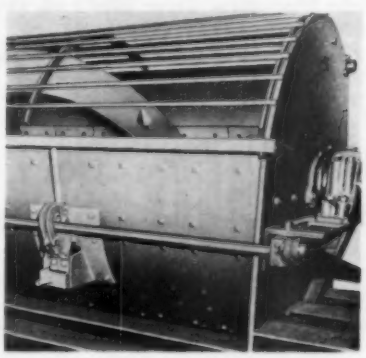

Fig. 2—Lending its support to the cause of a better plant safety program, Stearns Manufacturing Company, Inc., has developed a sampling door which permits the mixer operator, without disengaging the clutch or stopping the mixer, to take samples of mix without exposing his hands and arms to the dangers of the revolving blades.

contact with the moving parts of a concrete mixer's drive mechanism can be eliminated by proper attention to guarding, as described in N.C.M.A. Safety Bulletin No. 9.*

Extreme care should be exercised any time it becomes necessary to apply belt dressing to the belt of a running mixer. When it is necessary to reach all parts of the belt, inch it along slowly with the power off, or apply the dressing with a brush. Never use rags or cotton waste around a moving belt.

Outlaw the practice of snatching hand samples from between the blades of a running mixer in order to "feel" the mix consistency. This can be done in several ways.

The installation of modern moisture control equipment will automatically measure the consistency of the wet mix and make the necessary water adjustment. In some plants this type of equipment may be found sufficiently accurate to eliminate the need for hand sampling. In others, the equipment may be used to supplement hand sampling, making it possible for the operator to maintain a uniform mix once he has made his initial adjustments, based on hand samples.

Hand samples can be safely secured from a running mixer with the sampling device shown in Fig. 2. This simple device makes it unnecessary for the operator to stick his hand into the mixer to obtain a sample. Merely by raising the handle of the sampler to the position shown, the operator can draw a scoop of wet mix out of the running mixer. After closing the door, the operator removes the scoop from its holder, and the sample can be dumped back into the mixer. This sampler door lever locks in both the open and closed positions, so that it cannot be opened by internal pressure, aggregate weight, etc.

Another simple device is a small hole (approximately 1½ in. in diameter) in the side of the mixer through which a ribbon of concrete will extrude. Except for sampling, the hole is kept closed by means of a pivoted plate on the outside of the drum. This device has been observed giving good service in several plants.

There are concrete mixer hazards other than the three listed above—contamination and reduced visibility at the mixing area due to cement and aggregate dust, electrical shock from defective, improperly wired equipment, etc. However, these are the ones most closely related to the normal, day to day operation of the mixer. Safety measures which protect employees from injury by these hazards should be included in the safety program of all plants.

* See THE CONCRETE MANUFACTURER, September, 1956, page 270.

New Ruling Frees Mixers From Manufacturer's Tax

In a recent letter to member companies, the National Ready Mixed Concrete Association stated that on September 24, 1956, the Internal Revenue Service issued Revenue Ruling 56-479, which provides that a concrete truck mixer of the type generally used in transit mixing or agitating in the industry is not subject to the manufacturer's excise tax, even though it is mounted on an automobile truck chasis.

This ruling is a clarification of Section 4061 of the Internal Revenue Code of 1954, which imposed an excise tax of 5 percent on trucks, bus trailers, semi-trailers, and tractors, and the parts and accessories for such vehicles.

While the truck *mixer* is not subject to the tax, the truck *chassis* on which it is mounted will continue to be subject to the tax, when sold by the manufacturer.

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The two owners of the Concrete Products Company, Larry Bowman (right) and A. H. Burrough, at the automatic controls on the steam generator.

Concrete Products Company of Cape Cod

IN April, 1956, the Concrete Products Company of Cape Cod celebrated its 30th anniversary of continued operation at its present site in Falmouth, Mass. After three decades of progress the company is now setting up the most modern equipment, featuring close aggregate control, modern curing, and expanded production.

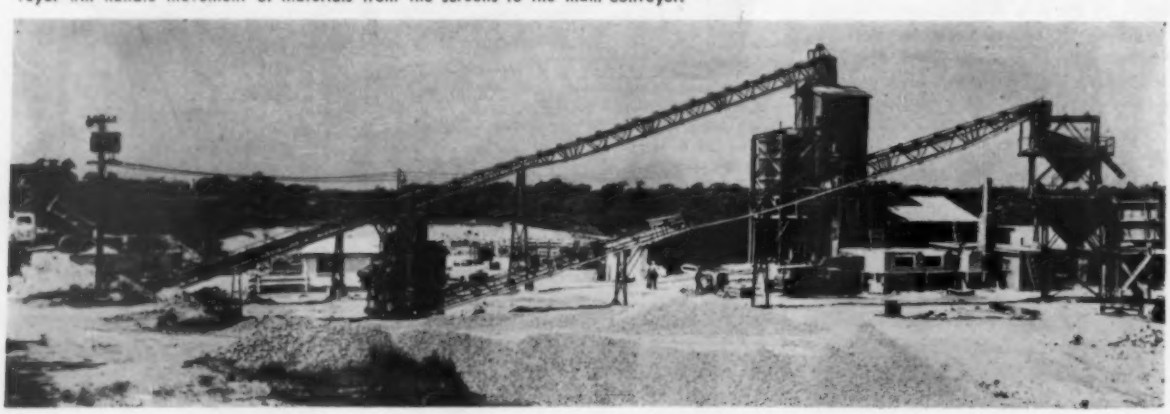
Founded by Larry Bowman, one of the present owners, and his brother-in-law, A. R. Wood, in the most rudimentary buildings and with the minimum of equipment, the business has grown progressively until today it is one of the largest producers of quality concrete units in the southeastern section of Massachusetts. The present modern plant is producing upwards of 7,000 blocks daily, a far cry from the 200 units made per day in earlier production. Ownership and management of the plant remains in Mr. Bowman's hands. A. H. Burrough assumed Mr. Wood's share of the business after the latter resigned some time ago.

This concern has enjoyed the reputation of producing only top quality concrete blocks, and is now launched on an expansion program which will bring into the plant the most modern machinery for further improving the quality of the product and keeping prices within a fairly competitive range.

One of the top priority projects in this expansion program includes completely new equipment for screening and crushing the aggregates used in the manufacture of the concrete units. Because they own more than 40 acres of good sand and gravel deposits in the vicinity of the plant, the proprietors have a considerable potential for setting up this substantial additional capacity to the present plant. The capacity of the new equipment will be such that a considerable portion of the output of the pit, beyond the plant requirements, will be available for local commercial uses.

When its modern mechanized equipment for producing and processing its own aggregates has been completely installed, this will be one of the few block plants in the New England area which produces its own aggregates. This effective aggregate control takes advantage of plant location and source of supply, as well as the limitations of the local market. Present equipment and method of aggregate handling are of interest to block producers faced with the problem of procuring adequate aggregates of the required

The materials-handling layout at plant of Concrete Products Company, Cape Cod, Mass., showing the jaw crusher (left center) and the conveyor to the screens (right). The conveyor in the background carries graded aggregates to the block plant (rear right). A future conveyor will handle movement of materials from the screens to the main conveyor.



expansion program of 30-year-old concern features aggregate control

A general view of the block plant, showing the conveyor to the overhead storage bins and some of the truck delivery equipment.

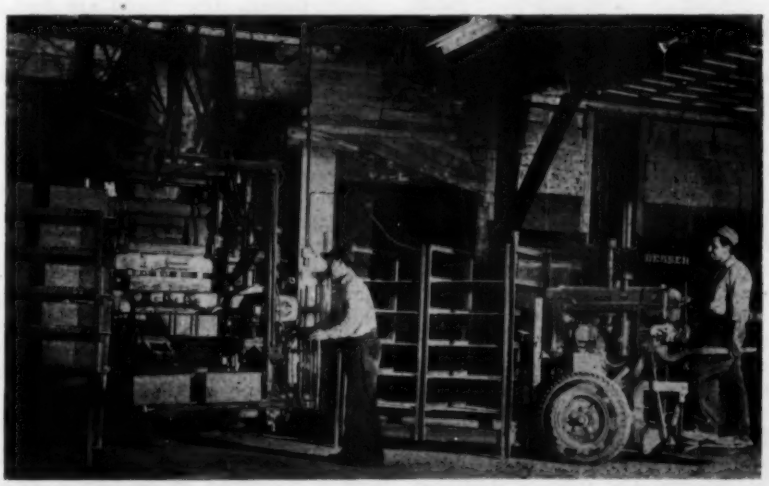
quality, whose holdings in pit area are sufficient to allow such development.

In the pit, bank run sand and gravel is now taken out by a Caterpillar HD-4 tractor which loads the rear-dump trucks. The materials are conveyed to a concrete 12-ton capacity collecting hopper with a 14-ft. square grill on top. This hopper feeds materials onto a Syntron feeder, which in turn controls the feed to the 18-in. wide inclined belt conveyor below. The frequency and intensity of the vibration of the Syntron feeder can be so controlled that the feed to the belt can be varied between 10 and 60 t.p.h.

This conveyor carries materials up to a 4- by 6-ft. Seco scalping screen installed at the top of the screen house. Material larger than 1¼ in. in size is separated at that point from the material passing the screen, and goes to a Climax jaw crusher, where it is reduced to 1- to ½-in. size. The opening in this crusher may be set so that three sizes of aggregate are produced. These are the 3/16 to 0 in., and ⅜ to ½ in. (both used in the block production), and ¾-in. stone, which is stored in bins and used for fill and other requirements afforded by the Cape Cod market.

Materials passing the 1¼-in. openings of the scalper screen are taken by another conveyor to a 4- by 6-ft. Allis - Chalmers Ripl - Flo vibrating screen for separation into the above gradations. Materials off the decks of this screen are chuted into a 4-compartment steel storage bin, from which the various gradations required in the block plant can be

The truck at the left is discharging finished aggregates to the block plant conveyor, while the one at the right dumps bank run materials to be conveyed to the jaw crusher and the screens.



Blocks are being made on this molding machine. The off-bearer, racks, and handling equipment used in block movement are also shown.

This kiln view shows the tightly sealed openings and aluminum doors, automatic steam control devices, and the sturdy racks.

obtained. Rear-dump trucks are used to convey aggregates from these storage bins to the hopper serving the belt conveyor going to the bins above the plant batcher and mixer. It is planned to install, as a part of the new conveying equipment, a new belt conveyor to accomplish this movement.

At present a total of only 67 hp. is required to operate the screening and crushing equipment, and conveyors, the Allis-Chalmers screen taking 7 hp., the Seco crusher 35 hp., and the existing conveying belts 25 hp. Future expansion plans will appreciably increase these power requirements, both for new crusher and screening equipment and additional belt conveyors. All electrical controls are housed in a small building adjacent to the Seco crusher, located at a point from which all equipment operation may be seen.

From the storage bin above the weigh batcher in the block plant, aggregates may be taken *via* chutes to the weigh batcher and the 50-cu. ft. Besser mixer above the molding machine. This is a plain-pallet Besser Super Vibrapac block machine, on which three 8-in. equivalents can be produced per cycle, resulting in a hourly production of 800-900 units or more, depending upon the rate of operation. The block is removed by a Besser off-bearer and loaded onto standard 72-block racks, which are removed from the machine room to curing kilns by means of an Erickson fork-lift truck.

There are now four kilns for curing the units. The three smaller ones are 45 ft. long, 9 ft. wide, and 7 ft. 6 in. high, and each has a capacity of 1,300 8-in. units. A fourth kiln is 55 ft. long, 13 ft. wide, and 7 ft. 6 in. high, and holds 2,200 8-in. equivalents. The proposed fifth kiln will be 55 ft. long, 14 ft. wide, and 7 ft. high. This will increase the present curing capacity by approximately 40 percent, and this extra curing area will permit an easier operation.

Kiln walls are built of standard 8-in. concrete blocks, and the aluminum doors are tightly sealed, permitting maintenance of a low steam pressure within. The kiln roofs are constructed of two layers of marine plywood separated by an 18-in. space which is filled with rock wool insulation.

The walls of the proposed additional kiln will be built of 8-in. thick standard Lelite lightweight concrete blocks, while the roof will be constructed of concrete plank made with special lightweight aggregates. These planks will span the space between steel beams installed at 6-ft. centers along the kiln roof. The planks will be sealed at the purlins and a 2-in. thick lightweight concrete roof slab on top of the planks will complete the roof structure.

Two low-pressure Consolidated Duo boilers are used for generating steam for low-pressure, high-temperature curing. The blocks are first set in the kiln and allowed to take their initial set and hardening for a period varying from 30 minutes to an hour. Then saturated steam is introduced into the kiln, and the temperature within is gradually increased to around 160 deg. F., which is held for the next 2 to 3 hours.

Following this preheating and hardening period, superheated steam at a temperature of 350 deg. F. is turned into the loaded kilns. This steam is very dry, and the effect is to dry out the block and absorb any moisture inside the kiln. Following this drying period of 2 to 3 hours, the steam is turned off, and the units are allowed to remain in the hot kiln until needed, or until they are to be stored. If production demands immediate use, these blocks can be removed after the third kiln has been filled; but ordinarily, with the kiln capacity available, the blocks are allowed to remain in the kiln overnight.

Blocks made at this plant have an excellent texture and color, and show high compressive strength. Recently four standard units taken from an average day's run were tested by Thompson-Lichtner Company, Boston, Mass., testing engineers. The units adequately met Federal Specification SS-C-621, which is required for the concrete blocks to be used in the nearby Otis Field Project for the Air Force. The average strength of these three-cell sand concrete units was 1,310 p.s.i. of gross area. They had 11.4 percent by weight of moisture, with an absorption of 9.5 percent, as received. The concrete density on the four specimen blocks averaged 124.8 lb. per cu. ft. of concrete, individual unit weight averaging 38.62 lb.

Delivery of units within a 40-mile radius of the plant is efficiently handled by a fleet of trucks, on which it is planned to install mechanical loading and unloading equipment. This will permit handling cubes of composite units from kilns or stock direct to jobs under way. A crew of only eight men handle the present production of the plant, and is not expected that this force will have to be augmented to utilize the increased production coming from the new equipment. The company's avowed aim is to improve its service constantly, and the new equipment and methods will help maintain the present position it holds as a leader in its field.

Mr. Burrough recently summed up the operation and aims of the company in the following statement: "In our 30 years of operation, Concrete Products Company has always concentrated on producing the highest quality blocks with the latest in machinery. Many of our customers have purchased block from us for the past 15 years, which I believe to be an excellent testimonial that our policy on service and production of quality units has stood the test of time."

A 45-story concrete skyscraper now being constructed in Sao Paulo, Brazil, will surpass in height a structure recently erected in Buenos Aires, which is said to hold the world's record for tall concrete buildings. The Sao Paulo skyscraper, which will called the Italia Building, will be completed in 1960.

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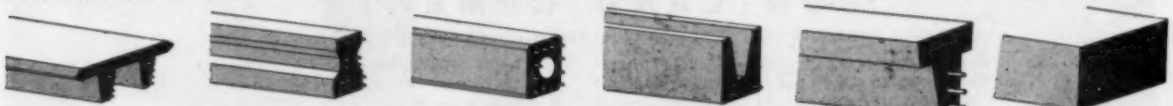
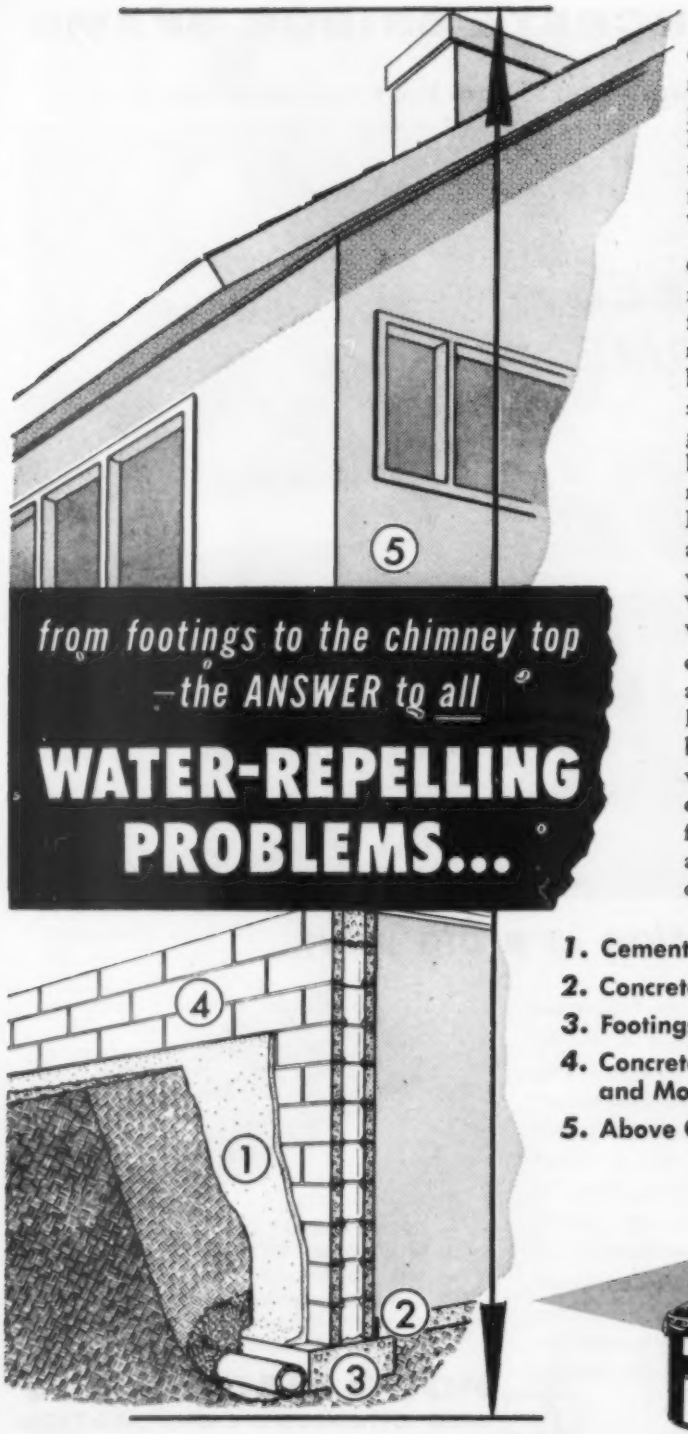


DOUBLE "TT" SLABS | BRIDGE BEAMS | SQUARE AND OCTAGONAL PILING | HOLLOW AND SOLID LINTELS | SINGLE "T" JOISTS | PAN TYPE BRIDGE DECKS



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● There are many water-repellents on the market . . . silicones, plastic vapor barriers, paints and coatings, just to mention a few. None, however, have the universal application . . . the ease of use . . . the low first and application cost of Medusa Waterproofed Cements.

● These thoroughly tested Medusa water repellents can be used in concrete for footings, slabs for basement floors and monolithic walls, in exterior and interior basement wall plaster coats, in concrete, stucco or block construction above or below grade. And their ease of use is unequalled by any other water repellent for they are mixed exactly like regular cements.
In areas where Medusa Waterproofed Cements are unavailable you can obtain similar water repellent results by using Medusa Waterproofing Powder or Medusa Waterproofing Paste with regular portland cements. Since Medusa water repellents are low in first cost, and require no special labor in application, you keep costs at a bare minimum. Make your construction water-repellent easily, economically and effectively . . . specify Medusa Waterproofings for all concrete, stucco, plaster coats and concrete products. Write for descriptive literature.

1. Cement plaster coat (below grade)
2. Concrete Floors (basement)
3. Footings (basement)
4. Concrete Blocks (above and below grade) and Mortar
5. Above Grade Concrete and Stucco

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OVER SIXTY YEARS OF CONCRETE PROGRESS

Big California Concern Finds Mobile Batch Setup Effective for Rush Jobs

Consolidated Rock Products Company of Los Angeles, one of the country's largest aggregate producers, is also in the ready-mixed-concrete business in a big way. In Los Angeles County alone it operates 12 or 13 permanent batch plants at strategic locations.

One of these is located in Montebello. Normally it can handle with dispatch any order for concrete within its delivery radius. But when Consolidated took a contract to supply large yardages on fast schedule for constructing Ford Motor's huge new Lincoln-Mercury plant adjacent to Montebello, it needed added batching capacity in a hurry.

The concern's earlier acquisition of a Noble-Mobile portable batching plant solved this problem nicely. Since the portable unit can be hauled over streets or highways in the manner of a semi-trailer, it was quickly moved into the Montebello yard, its pneumatic-tired 10-in. wheels were dismounted, and it was set up ready for action in 1 day.

Everything on the Mobile plant is self-contained—automatic scales and batcher, bulk-cement bin, aggregate compartments; even the wiring required no field-service connections. Aggregates are piled conveniently near, and the bins are kept full by a company-owned truck-mounted clamshell crane. A short inclined belt-conveyor, canvas covered to eliminate dust and for weather protection, charges the truck-mixers which arrive and depart in rapid succession. Up to 100 cu. yd. per hour is being turned out by the Noble-Mobile plant, which is able to handle the normal construction demands of the booming Montebello area, leaving Consolidated's permanent, automatic batch plant free to service the Lincoln-Mercury job exclusively.

Newly-Revised P.C.A. Bulletin Issued on Road Maintenance

The Portland Cement Association has revised its bulletin *Maintenance Practices for Concrete Pavement.* The 20-page bulletin includes descriptions of the best methods and procedures for sealing joints and cracks, for installing patches and broken areas or utility cuts, and for repairing chipped areas.

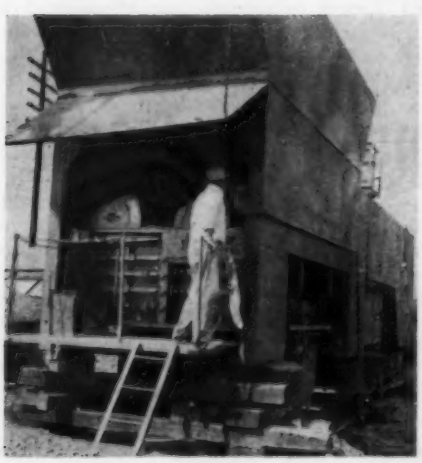
Copies are available without charge by writing to district P.C.A. offices.

Mississippi Products Firm Opens Facility at Jackson

Production was launched recently by the Jackson Stone Company, Jackson, Miss., at its new Mayes Street plant. The new facility features fully automatic operation; a Besser Vibrapac turns out concrete block at the rate of 500,000 per year. Steam curing equipment installed has twice the capacity of an older plant.

The company began operations in January, 1931, with a hand-operated concrete block machine capable of producing 300 blocks a day, and made two major expansions before adding the Mayes Street plant. Harry Fulcher and Sam Bailey are the owners of the business.

Right: This "on location" view at the Montebello yard shows the mobile batching plant, charging a truck-mixer. A crane is keeping the aggregate bins full; and a bulk-cement truck is unloading cement at the far end of the plant.



Below: An end view of the portable batch plant, revealing the scales and complete weighing facilities.

Below, right: This view shows the mobile plant, as well as the permanent plant (right).

The High Speed GRIFFIN Portable Cement Loader

WORKS AT ANY ANGLE
UP TO 300 BBLS./HR.
11' TO 100' IN LENGTH

from bulk cement car

10-DAY DELIVERY

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to truck

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"ZOOTER" is the modern, simple, economical way to *speed-load* trucks, bins, mixers and batchers from bulk cement cars.

Proved in scores of installations. Operates just as smoothly and easily in vertical position. Cuts loading time and labor costs to minimum.

View at right shows 11 foot unit with wheel-mounted, welded steel tubing frame, adjustable for height, and all accessories for feeding vertically to 21 feet. Price $1259.00, F.O.B. Honeoye, N.Y. Also available in standard 11' to 30' lengths—over 30' multiple sections used.

Prices subject to change without notice.

LARRY GRIFFIN CORP., 3001 James St., Syracuse, N. Y., Phone: 73-1514

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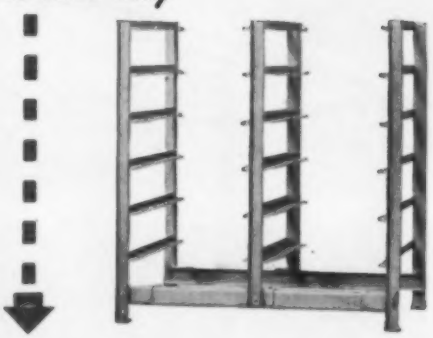
Your best buy



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and a

Happy New Year

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• 1956
• INCOME TAX
• $AVING$

Another P&O Exclusive

THE favorite topic of a good many taxpayers around the income tax filing deadline is a complaint about the tax advantages supposedly enjoyed by so-called "big business." Discussion is usually more heated than explicit.

By HAROLD J. ASHE

If the time so spent were employed constructively before the year's end, advantages might be gained by the grumblers.

A fact usually overlooked is that management of larger enterprises, including major ventures in the concrete industries, are uniformly alert to the income tax implications of many of their acts. For management, doing certain things, a consideration of the income tax effect may be the overriding factor; in other circumstances, failure to take certain action may also be governed by the result, in terms of tis effect on income tax. Income tax vigilance is practiced 12 months of the tax year.

On the other hand, too few closely-held smaller corporations and owners of non-corporate ventures have schooled themselves to think tax-wise. In place of tax vigilance there is negligence, if not downright indifference. Only belatedly do such owner-managers become income tax-conscious, long after the close of the tax year. Then it is too late. Tax advantages, if any present themselves, must be seized with alacrity during the tax year in question. While tax counsel, coming in late, may do everything possible to assure all available tax breaks, the taxpayer is not absolved of responsibility. The fact is that the taxpayer himself must usually create these tax savings before the end of the year.

Those who pass up tax-saving opportunities have the standard excuse of lack of time, over-work, and preoccupation with day-to-day management problems related to making a profit. Yet it is doubtful that, from the standpoint of net earnings, such an excuse is any more valid for the owner in the 30 percent individual income tax bracket than another in the 50 percent bracket (or 52 percent corporate rate). *Reducing an income tax bill is also a part of the profit motive, often a most rewarding one.*

Taxpayer A has net earnings of $18,000, has four exemptions, takes standard deduction, and files a joint return. He is in the 30 percent tax bracket. After income tax his net earnings are $14,500, less $126 Social Security tax. Average daily earnings after tax, for a 5-day business week, are about $55. Even a $55 income tax reduction should justify a few hours' time seeking additional deductions totaling only about $185.

Taxpaper B has net earnings of $39,000, has four exemptions, takes standard deduction, and files a joint return. He is in the 50 percent tax bracket. After income tax his net earnings are $26,800, less $126 Social Security tax. Average daily earnings, after tax, are just over $100. If he can reduce his tax bill by as little as $100 he has saved a day's salary. He need come up with only $200 more in deductions to do so.

Reducing Income Tax There are at least two (perhaps three) areas of activity in which a business owner may search out tax savings. These are (1) business, (2) non-business income sources, and (3) personal actions. A taxpaper, in analyzing his tax situation, should not approach the problem with preconceived ideas. His greatest potential for effecting tax savings may be in his business. Again, if he is tax-minded in business, he may already have done everything possible there to keep his tax bill down. His best chances for cutting the tax bill may lie in personal actions still available to him. He may be vigilant in all respects except non-business income-producing activities. Tax-savings are where they are found. They must be searched out with diligence and thoughtful effort.

Business Expenses Some items of expense may be postponed until 1957 or be incurred in 1956, as management elects. If incurred in 1956, these expenses will reduce 1956 net earnings by the exact dollar amount of such outlays. In this category are machinery and equipment repairs, including trucks. Postponing these expenses may push a taxpayer into a higher income tax bracket; incurring added expenses in 1956 may place him in a lower tax bracket. Prospects of lower net earnings in 1957 may warrant incurring expenses in 1956; if higher net earnings are likely in 1957, postponement may be justified.

Accelerated Depreciation If *new* plant equipment or trucks were purchased in 1956, it is not too soon to consider before the year's end whether such assets will be written off by the straight-line method or by a stepped-up method (double declining-balance or sum-of-the-years digits methods). More rapid recovery in the first years of asset life will reduce net earnings for those years subject to income tax, but may have an adverse effect in the last years of asset life.

Where the greater tax advantage lies, only the taxpayer himself can make an educated guess in the light of his present circumstances and probable future earnings. For a younger proprietor who has not yet hit his earnings stride, straight-line depreciation may be best. Aside from other considerations, for non-corporate ownership, accelerated depreciation may reduce adjusted gross income sufficiently so that itemizing personal deductions may exceed

available standard deduction for a tax saving.

Casualty Losses Before the end of the year the facts relating to any casualty losses sustained during the year should be reconstructed. If these losses were relatively minor and bearable, there's a good chance they'll be forgotten, at the time of the income tax filing deadline. The longer a taxpayer postpones building a record to support his claim, the greater the likelihood that a deduction will be denied because of insufficient proof. There is also the danger that the loss will be understated.

Bad Debts A business owner should make a final effort to determine the amounts of worthless uncollected accounts receivable being carried before the end of the year. Such bad debts can be deducted only in the year their worthlessness is determined, and may not be carried over and deducted in a subsequent year. If determined worthless in 1956 and deducted, net earnings will be reduced by the exact amount of such bad debts, and the income tax will be reduced by the amount the tax rate bears to the debts deducted. Worthless accounts receivable, to be deductible, must have been reported as income (accrual basis) in the current or earlier year.

Other Income Sources All expenses incident to earnings from non-business activities should be reflected in an income tax return. Such records may be less complete than for a business, since there are usually only cancelled checks and scattered receipts. Memory-prodding may be useful. In the case of income properties, both maintenance expenses and depreciation should be taken into account, and casual labor should not be neglected.

In the case of a duplex jointly occupied by a taxpayer and a tenant, a division of all joint expenses should be made. That part chargeable to the rental should be deducted to determine the net rental income. That part chargeable to the taxpayer's occupancy is not deductible, except as specifically an allowable personal deduction (if itemized), such as property taxes and interest on mortgage, if any. Actually, the more expenses that can be applied to reduce adjusted gross income *first*, the better the tax situation is likely to be. It may alter the situation in respect to electing the standard deduction or itemizing deductions.

Itemizing Deductions Only after every business and other income-producing activity has been surveyed for income tax-reducing possibilities is a taxpayer in a position to consider the alternative of itemizing personal deductions or electing the standard deduction. At this point the total of his personal deductions already accumulated may appear more favorable in relation to adjusted gross income. Acquiring additional deductible items may appear feasible.

For example, a small, sole-proprietor concrete operator, before the year's end, may estimate rather closely that his adjusted gross income will aggregate $9,000. His personal deductions at this point total only $700. The standard deduction of $900 offers the greater tax saving. However, he incurs an additional $500 equipment repair bill before the end of the year. Adjusted gross income now stands at $8,500. He remembers estimated adjusted gross income failed to take into account $500 of annual depreciation on a rental property. Adjusted gross income estimate now is $8,000. Itemization of personal deductions and standard deductions are only $100 apart ($800 standard versus $700 itemized).

Before the end of the year he pays some medical bills (fully deductible because earlier medical bills paid already exceed 3 percent which must be excluded), settles some charity pledges, and incurs and pays other deductible items, boosting deductible items to $950 against the adjusted gross income of $8,000 and a now reduced standard deduction of $800.

Without incurring additional business expenses, and increasing personal deductions, adjusted gross income would have been $8,500, less $850, less exemptions. As it is, the taxpayer reports $8,000, less $905, less exemptions, a reduction of $600 exposed to income taxation. Depending upon the number of exemptions, marital status, tax saving will be anywhere from $120 to $180. For a taxpayer in the $8,000-$9,000 income bracket this represents additional free-and-clear spendable earnings equal on an average three- to six-days' earnings.

Tricky Exemptions Incredible as it may seem, a large number of taxpayers do not count themselves as exemptions in income tax returns. An Internal Revenue Service study reveals this fact. Fortunately, such oversights may be caught on government audit. However, even a crystal-gazing auditor will fail to spot other overlooked exemptions to which a taxpayer may lay claim legitimately. Every exemption not taken will boost the tax bill by at least $120, ranging upward in the higher tax brackets.

Typical lost exemptions are those available for a taxpayer and/or spouse reaching 65 during the tax year; becoming, by legal definition, blind during the year; having offspring partly self-supporting, dependents not related to the taxpayer but supported by him, or dependents jointly supported by the taxpayer and others. In some cases, exemptions may simply be overlooked; in other instances, qualifying conditions may be ignored until it is too late to comply with them.

Age and Blind Exemptions Either or both spouses reaching 65 as late as the end of the year rate an age exemption worth $600 deduction. However, note a favorable legal quirk: *Courts hold a person is 65 on the day before his birthday.* Thus, a taxpayer whose 65th birthday falls on January 1, 1957, is 65 on December 31 for income tax exemption purposes. The same rule applies to his wife if she reaches her 65th birthday on January 1, 1957. (Note: age and blind exemptions are available only to the taxpayer and spouse—not to dependents, such as aging parents.)

Death of Spouse During Year An additional age and/or blind exemption may be taken if a spouse dies during the year, provided (a) the spouse was 65 or over prior to the time of death or (b) was blind on the day of death. A joint return may be filed for the year of death, with rules the same as though the spouse were still alive. Moreover, a split-income tax return may be filed for the first two succeeding years, provided there is a dependent child for whom an exemption is allowable.

Dependent's Support A dependent may be taken as an exemption, provided the taxpayer furnishes more than one-half of the support for the year, regardless of the category of the dependent. However, with exceptions noted, such dependent's gross income

(*Continued on page* 220)

2% of LOSORB

means this

instead of

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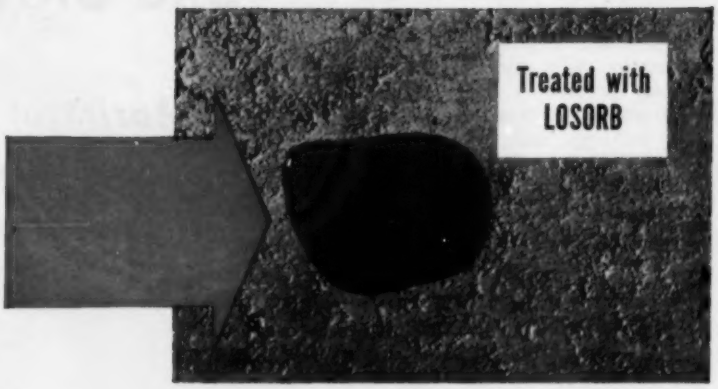
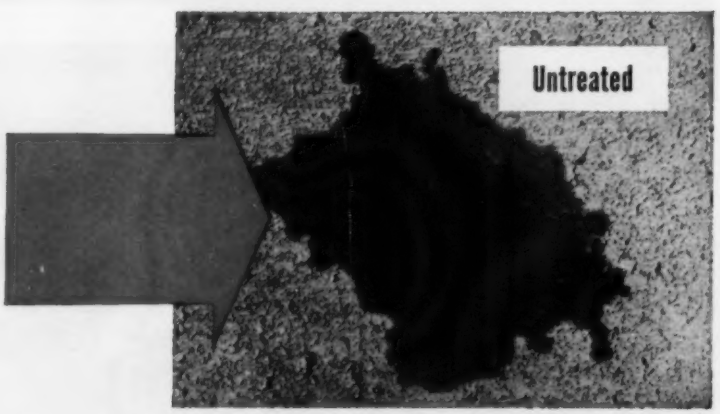
when added to

concrete mix





Moisture-proofing of concrete blocks and other products is "built-in" when LOSORB is added to the mix. The photographs above show how effectively Losorb prevents penetration of water. Both blocks are identical, except for the addition of a small percentage of Losorb in the treated block.

With walls of Losorb-treated cement block, the inside surfaces may be safely painted without plastering, and without danger of blistering and peeling due to passage of moisture through the blocks. Losorb eliminates the need of waterproofing above grade, reduces construction costs, minimizes crack-frequency, makes mix easier to work, prevents shrinkage of concrete blocks during curing, and provides many other practical, cost-saving advantages.

Write for complete details and instructions on how to use LOSORB. Use the coupon.

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Silo Staves for Industry

Marietta Concrete's new facility at Jamestown, N.Y., to serve St. Lawrence Seaway requirements

By ROY L. PECK

Another ON THE SPOT Report

When Marietta Concrete Corporation, Marietta, Ohio, acquired the plant and property of Conroe Concretes of Jamestown, N. Y., as a part of its expansion and decentralization program, it was realized that a potential market for its varied concrete products existed in connection with the St. Lawrence Seaway projects.

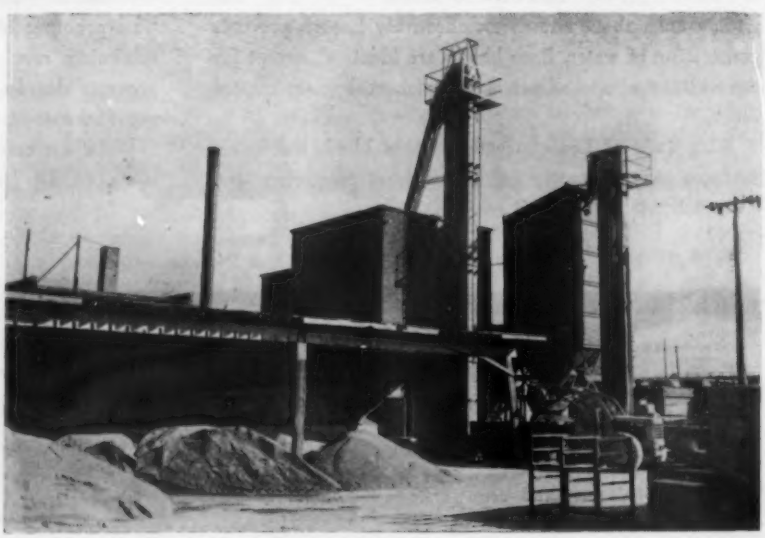
Structural changes in the production buildings and the installation of additional equipment for handling aggregates and cement represent an investment of over $200,000. With the farm silo stave market taking much of the present output in staves from April to October, it is felt that the expanded plant will be ready in the spring of 1957 to furnish the requirements of the entire state for such products, and also to create a surplus of stave stock for the industrial demands of the Seaway project.

Vernon Gatewood, manager of the Jamestown plant (left) and Charles Hockenberry, superintendent. Truck loading of silo staves is in progress in the background.

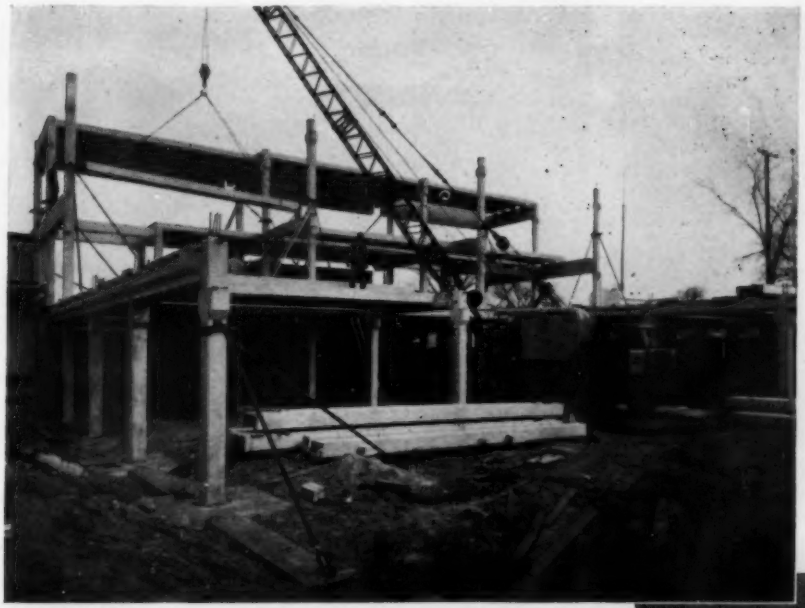
New equipment for the production of concrete block will augment the original portion of the plant output. The Conroe ready-mix equipment will be removed from the site, to afford more area for future plant expansion of stave and block production. Frank L. Christy, Marietta's president, estimates that the new facility will eventually mean an increase of 15 per cent to the corporation's annual gross income.

The 2½-acre property abuts the Erie Railroad tracks. Sand and gravel come to the plant *via* hopper-bottom cars either from Quarry, Pa. (near Bradford), or from Corydon, Pa. The plant has been using Beslite lightweight aggregate for a portion of the production in blocks, but it is planned to use Celocrete lightweight aggregate from Buffalo in the future. Aggregates are also delivered by truck.

Portland cement comes to the plan in bulk cars from the nearby mills of Lehigh, Penn-Dixie, and Bessemer. Cement has been in short supply over the last summer, mainly because of the demands from various state road programs enjoying priority shipments. Plant requirements



A general yard view of the Jamestown, N.Y., silo stave plant of Marietta Concrete Corporation before alterations which added new bin storage. The temporary material storage under the sheds is shown at the left.



The addition is approximately 91 ft. x 114 ft. with 16 ft. x 30 ft. bays. Prestressed beams run the 114 ft. length, spanning 16 ft. over the precast columns. Prestressed channel slabs of 12 in. depth span the 30 feet between the beams at floors and roof.

Owner: MINNESOTA RUBBER and GASKET CO., St. Louis Park, Minn.

Architect: MAGNEY, TUSLER & SETTER, Minneapolis, Minn.

Precast concrete manufactured and erected by: PRESTRESSED CONCRETE, INC., St. Paul, Minn.

PRESTRESSED AND PRECAST STRUCTURAL CONCRETE

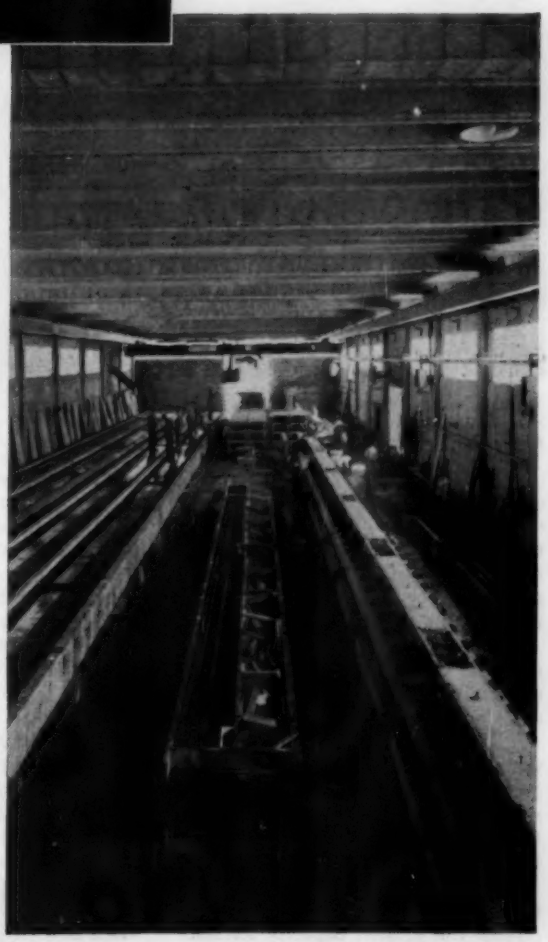
FRAMING saved time and money for Minnesota Rubber and Gasket Company

The new three story addition to the St. Louis Park, Minnesota, plant of Minnesota Rubber and Gasket Company is constructed entirely of precast concrete columns and prestressed beams, floor channels, and roof channels. These modern materials cut framing costs 20%, permitted 4 months earlier occupancy and eliminated expensive fireproofing.

LEHIGH EARLY STRENGTH CEMENT saved time and money for Prestressed Concrete, Inc.

All structural units were cast in the modern plant of Prestressed Concrete, Inc. Using Lehigh Early Strength Cement and hot water curing, the concrete reached 3500 PSI in 12 hours. As a result, the manufacturer gained maximum production efficiency and economy through early removal of units and quick reuse of forms.

Whatever your cement requirements, there are Lehigh Cements to fit them. And remember, in the manufacture of special precast units, the chances are that Lehigh Early Strength Cement will save you time and cut production costs.

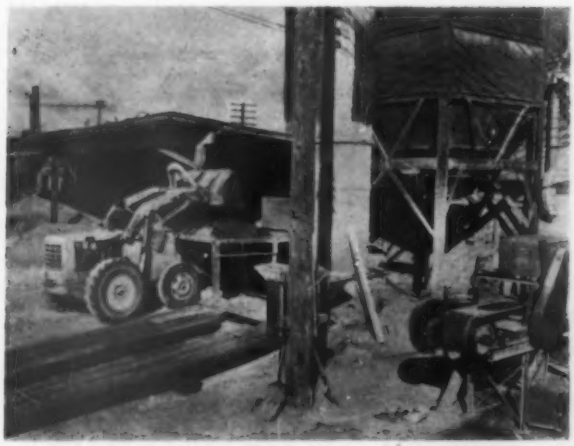


Interior view of Prestressed Concrete's casting plant. Four channel beds at left are 200 ft. long. In center is bed for precasting reinforced beams. Next to the far right is a 100 ft. bed for prestressing beams. At far right is a form for precasting columns.

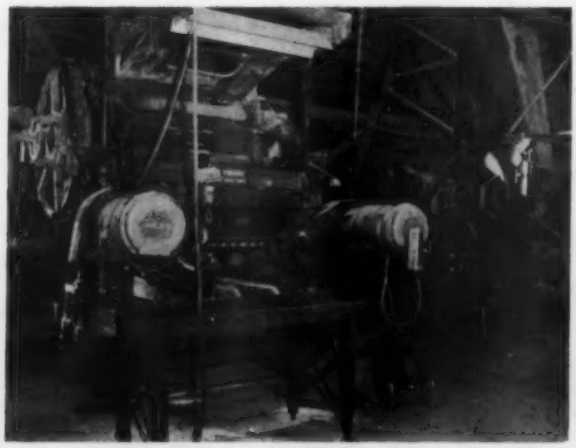
- LEHIGH EARLY STRENGTH CEMENT
- LEHIGH PORTLAND CEMENT
- LEHIGH MORTAR CEMENT
- LEHIGH AIR-ENTRAINING CEMENT

LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa.



At present material movement is done with a front-end loader to the hopper feeding the elevators. The end of the conveyor serving the track hopper is at the right.



The stave machine (left) and the block molding machine receive concrete from the mixers in the rear through chutes fed by skip hoists.

The staff-designed stave pallet cleaning machine has a powered rotating brush and feeder.

Metal fittings used in connection with silo stave installations. All fittings are of galvanized iron.

exceed 15,000 bbl. annually. One of the early planned additions to the plant is a cement silo of sufficient capacity to provide additional storage for cement in the late summer months

Under-track and truck hoppers feed the conveyors which carry the materials to the two Jeffrey bucket elevators serving the overhead bins. Until more bin capacity is built, some storage piles of lightweight aggregates are under covered storage sheds, from which they are moved by a Hough Payloader front-end loader to feeder bins at the base of the material elevator. Provision has been made for additional bins to double the present capacity for material storage.

Aggregates and cement are fed by gravity from the overhead bins through weigh batchers to the two 50-cu. ft. Besser mixers. These serve *via* skip hoists both the Besser Vibrapac plain pallet stripper and the Besser stave machine, set side by side on the mixer plant floor.

On the day we visited the plant, only staves were being produced, as the stockpile of blocks is adequate for the daily demand. Due to lack of adequate curing capacity, only a portion of the plant's machine capacity can be utilized efficiently, and at present only blocks or staves can be produced at a time for this reason. There are now six 8- by 8- by 30-ft. curing kilns, each having a capacity of 3,200 8-in. equivalent blocks, or 4,500 standard 10- by 30- by 2½-in. staves.

The stave machine can turn out 6,000 standard staves daily, but the presently inadequate curing capacity reduces the effective output of the plant. This situation, however, will be remedied in the near future when new curing kilns are built. Under the conditions existing in the past only slightly over 200,000 staves have been produced annually since the plant started in November, 1954. This production will be tripled with the new curing and bin equipment.

Staves are manufactured on edge, six at a time, on corrugated steel pallets providing tongue-and-groove ends and sides. As shown in the pictures, the staves are stockpiled in this position after curing. Deliveries are made to all points by leased flatbed trucks, loads per truck unit varying from 300 to 600 staves. Pallets are cleaned by means of a staff-designed cleaner. A small portion of the galvanized iron fittings used in connection with the installation of staves in silo construction are shown in a picture. It is said that upwards of $20,000 worth of these fittings are generally kept in stock at the plant.

Vernon Gatewood is the manager of the plant, and Charles Hockenberry is superintendent. At the peak of the production season about 28 men are required to operate the plant, and this number will not be appreciably increased when the new equipment will practically triple the output.

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot lines under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96″ I. D. reinforced concrete pipe 88′ under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS — Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot pipe sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.

JACKING PROCEDURE — A service pit 28′ deep by 22′ wide by 40′ long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the pipe sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48″ ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.

↑ Steel rails cradle pipe sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of pipe cuts down friction—for easier sliding.

← Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ⅓ of the 48″ ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside pipe that is being driven.

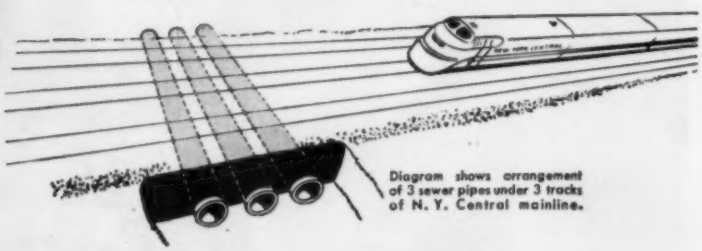


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

7411 Walker St. • Minneapolis 16, Minnesota

first round bin made by Butler for

Franzen of Indianapolis

new block plant equipped for expansion in ideal location

By ROY L. PECK

Another ON THE SPOT Report

A DOZEN years ago the Franzen Block and Material Company started operating a concrete block business in Indianapolis on a small scale. It took a decade to reach the point of requiring a new plant, which is basically planned for future expansion and ideally situated to facilitate delivery of products to all outlying areas of the city. Edward G. Franzen, owner of the company, before becoming a block maker, had been selling sand and gravel since 1920, and was well acquainted with aggregate production sources around Indianapolis.

The new Kentucky Avenue plant, located about two miles southwest of the center of the city on U.S. Route 67, is a stone's throw from the extensive pits of the American Aggregates Corporation, which furnishes Franzen with the washed No. 4 sand and No. 5 gravel for the heavyweight concrete portion of its output.

About half of total Franzen production for the last year has been lightweight block. The two grades of Haydite aggregates for these units come from the new plant of Midwest Aggregates, Inc., Brooklyn, Ind., about 17 miles southwest of the Franzen Company. Bulk cement is purchased from the near-by plants of Lone Star and Lehigh. All these materials arrive by truck.

The aggregate-material-handling equipment is mostly by Butler Bin Company. It consists of a 7-ton capacity steel hopper serving a 75-ft. high bucket elevator, which lifts materials to the overhead cylindrical steel bin set inside the plant. Bulk cement is also discharged into a similar hopper and raised by a cement bucket elevator to the cement compartment of the same bin. This elevator will handle a 135-bbl. truckload of cement in about 40 minutes. The four-compartment, 240-cu. yd. capacity bin is believed to be the

An interior view of the machine room, showing the cylindrical bin, the mixer, the skip hoist, the block machine, and the pallet cleaner. Space is provided for additional units.

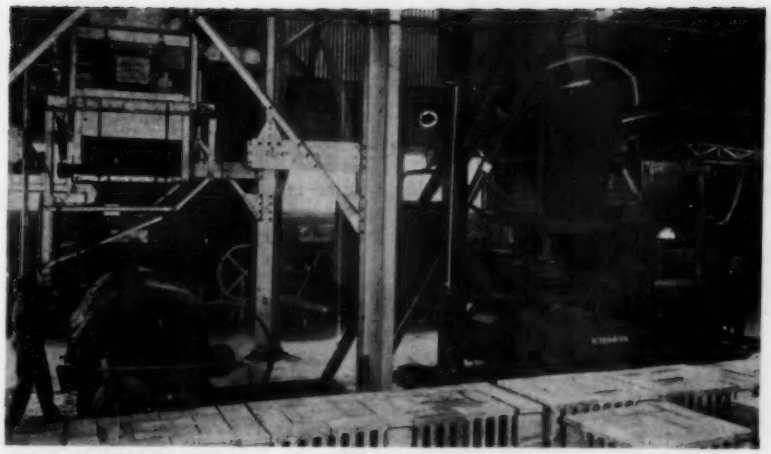
Neatness of exterior and interior is quickly noted at the new block plant of Franzen Block and Material Company, Indianapolis, Ind., shown here just after completion of construction.

first round bin made by Butler for a concrete block plant. In it are two 35-cu. yd. compartments, a 70-cu. yd. section for aggregates, and one 600-bbl. compartment for cement.

All materials taken from the bin go down by gravity and automatic preset weighing to a 50-cu. ft. capacity Butler weighbatcher installed directly under the bin. This weighbatcher is mounted on steel wheels resting on a rail frame which can be extended to the adjoining section of the plant to meet expansion needs. In such an arrangement the bin and weighbatcher will serve two adjacent mixer-machine setups adequately.

The weighbatcher discharges by gravity into the 50-cu. ft. Stearns mixer, set at the plant floor level. The discharge of the mixer is taken by a Stearns skip-hoist to the top of the machine hopper. A Stearns 50-3 molding machine makes three 8-in. equivalent units at a time on plain steel pallets. The machine is rated for the production of 15 units per minute, and we were told that on several occasions involving some overtime 7,000 8-in. equivalent units have been produced in a single-shift working day.

The 3-cell, 50 percent air space blocks are taken from the machine by means of a Stearns off-bearer equipped with magnetic pallet pick-up, and placed on standard 72-block racks made locally for the company. Movement of racks is handled by three forklift trucks,—a Clark, an Ericson, and a Hyster—all of 4,000-lb. capacities. An additional Clark 6,000-lb. lift truck will be delivered in the near future. Empty pallets



Another view in the machine room early in the production period. Note the sealing on the mixer for dust retention. Block cubing is done inside the plant in winter months.

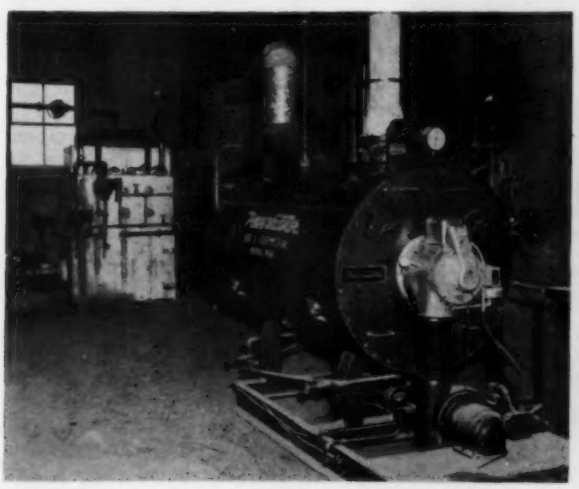
are placed on a Stearns pallet return and go through a pallet cleaner enroute into the machine. This cleaner, custom-made for the company, has a rotating steel brush which cleans the top of the pallet after it has been sprayed with a liquid solvent. Pallets can be cleaned at the production rate of the machine.

Curing facilities now include the use of four high-temperature, low-pressure kilns, with adequate space at either end of the line for addi-

Above: Four high-temperature kilns have been installed, with vapor seals around doors. There is adequate space for more kilns.

Precast concrete lintels, sills, coping, and cast stone are made on this vibrating table. The bin and mixer are in the rear.

Below: Steam generating units are installed in the boiler room, one a packaged automatic type and the other a vertical flue boiler.



tional curing kilns when expansion beyond the present total curing capacity of 12,000 equivalent units is w ..anted. Each kiln is 60 ft. long, 13 ft. 6 in. wide, and 7 ft. 4 in. high, all dimensions being on the interior of the kiln. The floors are of reinforced concrete, 4 in. thick, placed on a sand fill bed. The intermediate walls of adjoining kilns are the hollow-wall type, built of one 8-in. and one 4-in. unit, with a 2-in. air space between the units. In the roof construction Tee-bar joists were set on 24-in. centers and soffit block placed between these joists. Above these blocks is a 2-in. layer of foam glass insulation and a 2-in. thickness of lightweight concrete. A three-ply built-up roofing completes the roof structure.

Kiln doors were furnished by Universal Door Carrier, Inc., and are constructed of rigid insulation board with covers of embossed corrugated aluminum on the front and back. Door panels are set in a steel framework and have 15-lb. felt vapor seals around the edges and are mounted on overhead track carriers, with counter-weight lifting attachments.

Both saturated and superheated steam is used for curing. There are two separate boiler units, the first of these being a 30-hp. Powermaster Model 4-L packaged automatic boiler made by Orr & Sembower, Inc., and operating at a working pressure of 15 p.s.i. It is fired with No. 3 fuel oil and equipped with an integral condensate return system. Controls operate on a 220-volt, 60-ampere current.

The other boiler is a Consolidated Duo, vertical-flue-type boiler, made by the A. F. Robinson Boiler Works for Burkhart Engineering Associates, Inc., the installing company. Steam from these units is used for curing and heating, and for preventing aggregates from freezing in the storage bins. Steam comes to the kilns through a 2-in. diameter feed pipe which discharges steam at the far end of each kiln. At the termination of the period of curing, the hot air is exhausted from the kilns by a fan, which lowers the temperature within the kilns.

Blocks are cubed in 50-unit cubes and loaded on trucks by forklift trucks. The entire working area is concrete paved.

As the blocks are made and racked, they are taken by lift truck into the kiln being loaded and allowed to stand for approximately two hours. At this point saturated steam at approximately 10 p.s.i. and temperature of 150 to 160 deg. F. is introduced into the loaded, sealed kiln. This pressure and temperature is held for another half-hour, when dry, super-heated steam at about 325 deg. F. is turned on and held for the next 3½ hours.

The kilns are usually kept tightly closed overnight and unloaded the next morning to stock, *via* the cubing point. Only about 60,000 equivalent units are kept in stock during the building season, as delivery usually occurs shortly after the units are cubed. Cubing is done with 50 equivalents (8-in.) per cube, this size having been found most advantageous in stockpiling and truck loading.

All units are regularly tested for quality by the Pittsburgh Testing Laboratory. A recent typical test of three representative 3-cell 8-in. units having a wall thickness of 1¼ in., a net area of 119.02 sq. in., and weight (average) of 27.21 lb. averaged 1,226 p.s.i. compression strength. From the appearance of the exterior surface of stockpiled units in the yard, it is evident that the correct moisture content, with maximum water, is used in the mix. No moisture control equipment is used in the plant.

The block machine building is 60 ft. by 74 ft. in area. The northeast third of the area has 60 ft. of headroom, to accommodate the height of the cylindrical bin, the batcher, the skip hoist, and the mixer. The remainder of the area has a 16-ft. ceiling. The walls are of 12-in. concrete masonry, and the roof of wood planking, supported on steel beams and H columns. In the concrete paved space adjacent to the present single machine the foundations and pit have been set in place for the installation of another machine.

Adjoining the machine room on the west is a one-story building 48 ft. by 72 ft. in size which is now being used for manufacturing precast concrete lintels, sills, coping, and architectural cast stone of all types. Equipment for this production includes an outside steel hopper, serving a General bucket elevator and a two-compartment, 25-ton steel bin installed inside the building. Both aggregates and cement are handled by this equipment.

Materials flow by gravity into a 9-cu. ft. Blystone batch mixer which

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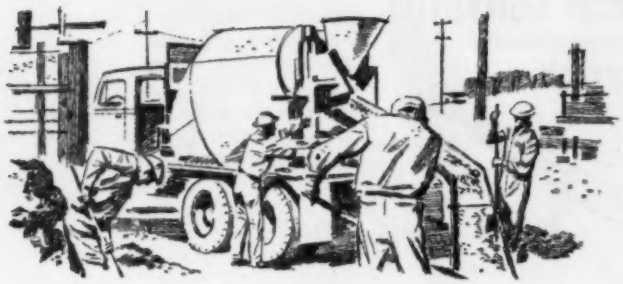
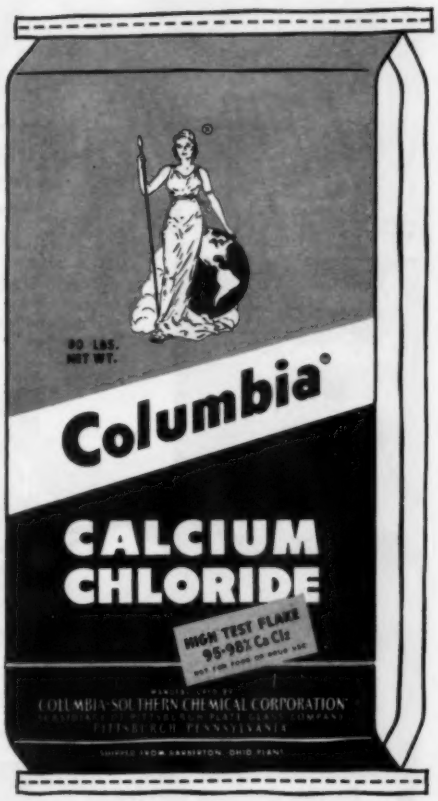
COLUMBIA CALCIUM CHLORIDE





now available for use in ready-mix and concrete products

Columbia HIGH TEST FLAKE Calcium Chloride which tests 95-98% $CaCl_2$ is now being shipped from the Barberton, Ohio, plant.

This new HIGH TEST FLAKE production is in addition to Columbia's Regular Flake.

Columbia HIGH TEST FLAKE Calcium Chloride has approximately 20% higher calcium chloride content than Regular Flake. An 80 pound bag of HIGH TEST FLAKE does the job of 100 pounds of Regular Flake. This higher concentration results in (1) smaller tonnages for you to handle, and (2) freight savings due to the higher calcium chloride content by weight.

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Contact your Columbia supplier or your nearest district sales office for prompt delivery on your HIGH TEST or REGULAR FLAKE calcium chloride requirements.

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IN READY MIX . . . Columbia Calcium Chloride makes initial and final set three times faster . . . increases early and ultimate strength . . . releases forms faster for re-use . . . cuts down on overtime.

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IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

produces the low-slump concrete required for this production. The concrete is taken to a 5- by 8-ft. vibrating steel table, designed by company personnel. Controlled vibration of this table is by means of an offset cam mounted on a shaft which is gear-driven by a 3-hp. electric motor. All forms used for the precasting were made locally of heavy gauge steel. These forms are oiled before use, producing a glossy surface on the cast products.

All deliveries are by leased trucks, although the company owns and operates several flatbed trucks for delivering precast units. Many contractors pick up blocks at the plant with their own trucks. Block deliveries are usually within a radius of 30 miles of the plant, but precast units are sent to many points all over Indiana, one shipment going as far as Gary—more than 175 miles away.

An attractive office building now houses the headquarters of the company, affording display space and private offices. This is a one-story structure of concrete blocks laid in varying bond and painted on both exterior and interior surfaces, displaying the product in excellent fashion. The concrete floor and roof are of concrete. The roof is built similarly to those of the curing kilns, affording a high degree of insulation within.

One-half of the 8-acre property is fenced in with a 6-ft. steel wire fence and a steel gate entrance, set back 30 ft. from the highway. The working area and space for storage, about 3 acres, is concrete-paved. Visitors note the neat appearance of the entire plant area, especially the orderly stockpiles, as shown in the accompanying pictures of the plant. This orderliness is a selling point which is lacking in many block plants today. It is a matter which should be emphasized in new plant installation, especially if it is located beside a national highway, as in the case of this plant. This point is quite important in Indianapolis, a city in which considerable concrete masonry is used, but in which there are competitive conditions within the industry.

Officers of the company include Mr. Franzen, president; Mildred M. Franzen, his wife, vice-president; Vernon K. Hinchman, secretary; Clark Kraft, superintendent; and John R. Noble, office manager. A crew averaging 17 is employed for plant operations.

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Yes, it takes The ANDREWS Tubular Screw Conveyor to get fast, efficient, continuous movement of:

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The ANDREWS Portable Conveyor has the versatile abilities to handle a large variety of free flowing uniform granular materials. Also available in permanent models without wheels. With the P-51 attachment (see below, right) its scope is virtually unlimited.

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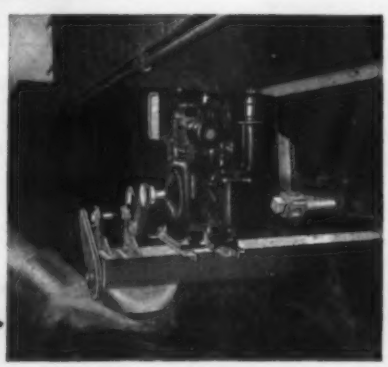
Portable Overtrack Conveyor

Teams with the ANDREWS Portable and Permanent Tubular Conveyor to perform double-duty at Cement, Ready Mix, Concrete Block and similar plants unloading covered hopper cars. No pit has to be dug under the track with the ANDREWS P-51 eliminating the usual water hazard. A railroad car can be spotted at any point and unloaded at a moments notice.



The P-51 is shown feeding into an ANDREWS Portable Tubular Screw Conveyor.

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Income Tax Savings

(*From page* 210)

for the year must be less than $600. However, a dependent's gross income may now be $600 or more, provided he is the taxpayer's child (a) less than 19 years old or (b) a student attending school or college five or more months — not necessarily consecutively—during the year. Even in these two categories, note that the taxpayer must contribute more than one-half of the support, no matter how much it aggregates. The value of a scholarship need not be counted in total support for determining the "over-one-half" rule.

Construction of a $100,000 plant in Waukesha, Wis., for Vander Heyden, Inc., West Allis, will quadruple production of Dox Block precast concrete slabs. The blocks, made at the West Allis plant, are transported to the Waukesha plant for assembly into slabs. B. A. Vander Heyden, vice-president of the firm and originator of Dox Block, has licensed 17 other plants throughout the country to manufacture the product.

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Earl Peterson of N.C.M.A. Addresses Kansas C.M. Assn.

At a recent meeting of the Kansas Concrete Masonry Association in Ottawa, Kans., the principal speaker was Earl W. Peterson, president of the National Concrete Masonry Association.

Mr. Peterson stressed the important role played by N.C.M.A. in technical advances made recently in the concrete block industry and cited the advantages of membership in this organization. He stated that 25 percent of the N.C.M.A. budget is earmarked for technical work and services. This type of study includes the testing of standard block curing methods, the effectiveness of moisture meters, and related projects. Mr. Peterson also described the $250,000 laboratory which has been planned for N.C.M.A. near West Chicago, Ill.

Ben Park, general sales manager of Buildex, Inc., producers of expanded-shale aggregate, was host to the meeting. One feature of the program was a tour of the Buildex plant. Special guests included Dwight Brown, Kansas state architect; George Beal, Kansas University school of architecture; and W. E. Gibson, engineer of tests, Kansas Highway Commission.

At the speakers' table were Don R. Hollis, vice-president, American Institute of Architects; Earl W. Peterson, president, National Concrete Masonry Association; Jim Hammel, president, Kansas Concrete Masonry Association; and A. K. Bader, vice-president, American Institute of Architects.

Presiding at the sessions was Jim Hammel, Clay Center, Kansas Concrete Masonry Association president.

Chicago Concrete Firms Hold Annual Get-Together

The Concrete Contractors of Greater Chicago, some 400 strong, held their annual banquet and dinner dance at the Morrison Hotel, Chicago, on the evening of October 27. (This organization, headed by Bert Carey, president, includes Chicago area contracting firms using large amounts of ready-mixed concrete.) Members and their wives enjoyed a presentation of the "Concrete Frolics of 1956" and danced till the early hours.

It was announced that representatives of the concrete industry of Spain will soon visit Chicago during a tour of this country under the sponsorship of the American Marketing Association, Washington, D. C. This group will discuss marketing methods used by ready-mix concrete companies, and will consider how contractors can best utilize this product to mutual advantage.

In addition to Mr. Carey, officers of the association include Henry Steigerwaldt, vice-president, and Henry Meyers, secretary-treasurer. Directors are Phillip Accomando, Henry Altergott, William DeGraf, Edward McCarthy, Joseph Slonim, and Arthur Regan. James St. Clair is executive secretary of the group.

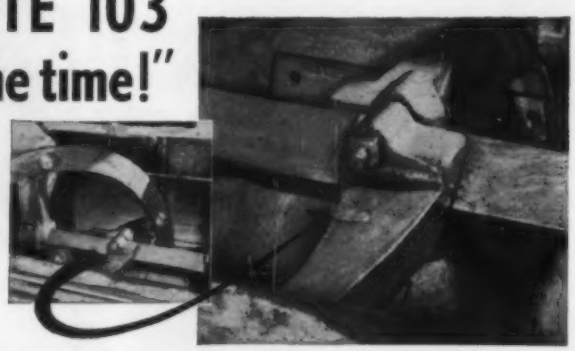
The Underwood Concrete Products Company, Mobile, Ala., subsidiary of the Underwood Builders Supply Company, has just completed a $250,000 plant for the manufacture of concrete block. This plant covers three blocks and is set up to turn out 1,000 block per hour.

A new cinder and concrete block plant with an annual capacity of 4,500,000 block has been completed at Frederick, Md., for Supreme Concrete Block Products, Inc. Blocks and precast and prestressed concrete members for the construction of the new plant were supplied by the firm's three other plants located at Hagerstown and Winchester, Va., and Chambersburg, Pa.

"Cleaned with a whisk broom, putty knife and . . .

EDI-COTE 103 in half the time!"

says owner* of this 17 year old mixer that looks like new.



EDI-COTE #103 is a revolutionary new release agent that prevents concrete from bonding to mixer blades and parts. EDI-COTE #103 eliminates the use of air guns and sledge hammers in the daily clean-up. EDI-COTE #103 creates a non-hardening film which prevents the forming of a bond between concrete and metal. It adheres rigidly and will not dissipate due to chemical action or abrasion. One application of EDI-COTE #103 will remain effective throughout the longest working day. EDI-COTE #103 can be applied with brush or spray. Shipped in 55 gallon drums. 5 gallon cans available for trial shipments only. Order EDI-COTE # 103 today!

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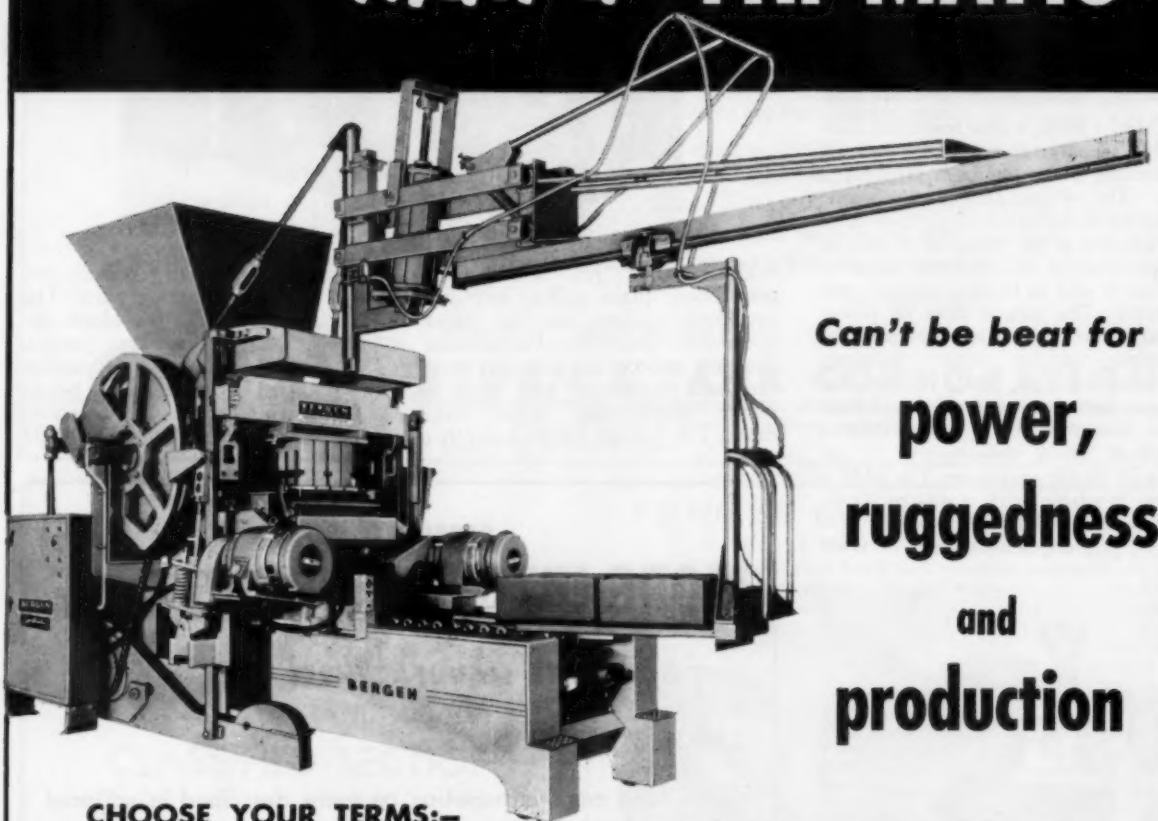
For further information on EDI-COTE #103, see your NCMA Technical Bulletin No. 2, Attachment No. 1, March 3, 1955.

NO BETTER Block Machine than a TRI-MATIC



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No block machine on the market today exceeds the TRI-MATIC for the essential features of heavy-duty construction, designed for and producing the finest block at maximum speed.

If you want high production, Tri-Matic is designed to run without strain at rates up to 6 mold cycles per minute, yielding an average of 10,000 — 8" equivalent units per typical 10 hour day. If you want power and ruggedness, just check the size of all motors, shafts, pulleys, etc. . . . AND — not one ounce of quality workmanship or material is sacrificed ANYWHERE on a TRI-MATIC.

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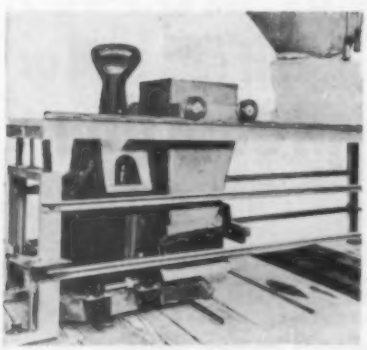
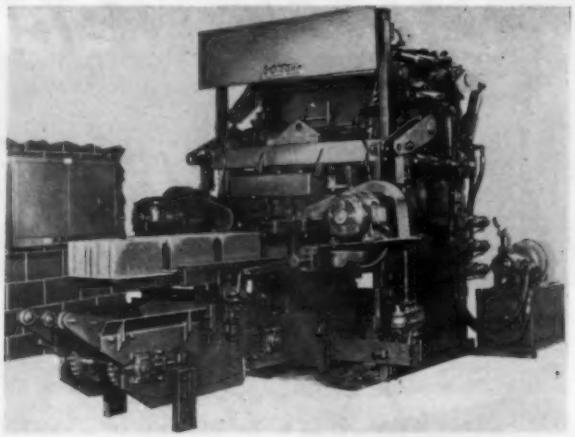
CM New Machinery and Supplies

• Model M30, a new materials handling truck with an 18 cu. ft. bulk handling body, has been introduced by The Prime-Mover Company. The M30, featuring torque converter drive, has a top speed of 12 m.p.h. Operation of this 1½-ton capacity truck is said to be safe, smooth, and simple. The steady flow of power starts the load smoothly, provides positive inching control, increases maneuverability, and reduces fatigue. Because most mechanical parts are immersed in oil and cushioned against shock, maintenance is reduced to the minimum. The M30 is also available with a 42- by 42-in. flatbed. Overall width of the M30 is 42 in.; length is 88½ in. **(101)**



• Test weighings on automatic bagging scales manufactured at the Richardson Scale Company are now performed by automatic devices, such as the one shown above. This device is positioned under an automatic scale, receives the discharge from the scale into its hopper, and is pushed to the other side of its track to a test scale. The weight is checked and recorded, and the device is pushed back to the other end of the tracks, where a horizontal bar hits its discharge flapper and the contents of the hopper are discharged into the elevator below. **(102)**



• The GOcorp "Jet," a new high-production, plain pallet, hydraulic two-block machine, has been developed by the Gene Olson Corporation. Features include quick-change feed, time and changeable strip speed to handle troublesome mixes; automatic, low voltage height control; a smooth acting block receiver; and easily accessible working parts. The machine can put out 600 blocks per hour. Oversized motors, pumps, shafts, and single acting cylinders are standard equipment. Full height molds can be changed in 20 minutes; others in not over a half-hour. **(103)**

DECEMBER, 1956

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
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Please send more information on items described in editorial columns of this issue, as circled below.

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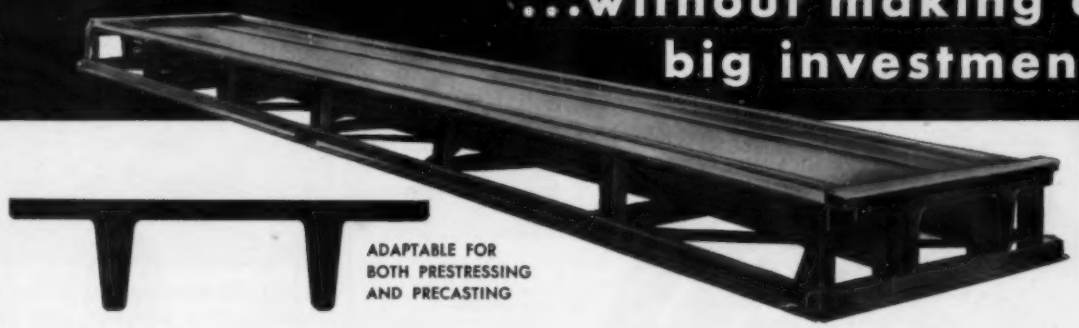

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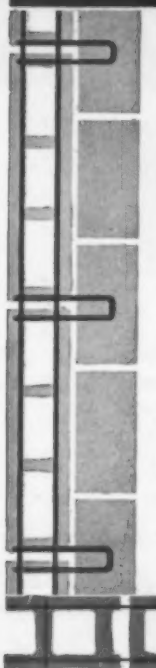
MASONRY REINFORCING

FOR SOLID WALLS

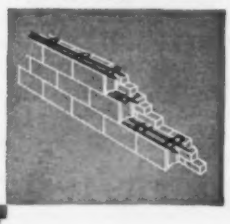


ECONO-LOK* . . .

Specifically designed for brick walls with concrete masonry back-up.

- **Eliminates moisture conducting brick header courses (Complies with ASA requirements for metal bonders.)**
- **Ties inner wythe to outer wythe**
- **Reinforces concrete masonry**
- **Permits flexibility of design**
- **Flush-welded on 16" centers**

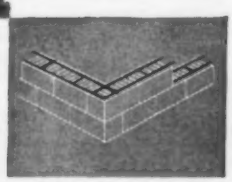
Made in 12-ft. lengths from all #9 ga. or all 3/16" high tensile steel wire with U-Ties flush welded 16" center to center.



BLOK-LOK . . .

Flush welded at cross ties for greater strength.

- Small masonry joint
- Maximum structural strength (tension tested by Columbia University)
- No obstruction to mechanical trades
- Minimum job breakage
- Packaged for identification and protection



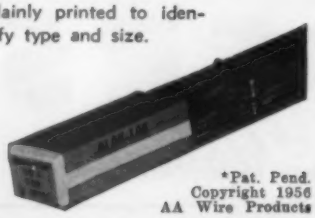
Available in 10-ft or 12-ft. lengths; in various gauges and finishes.

FAMOUS FLUSH WELD

Designed and tested to required standards. Extensive testing laboratory reports serve to confirm the sound engineering of BLOK-LOK's design.

BUNDLE WRAPPERS

Plainly printed to identify type and size.



*Pat. Pend.
Copyright 1956
AA Wire Products

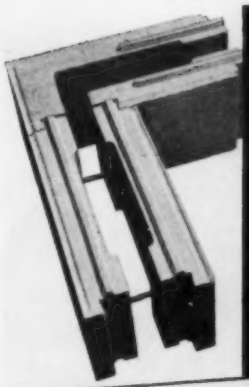
AA WIRE PRODUCTS COMPANY

7211 COTTAGE GROVE AVE., CHICAGO 19, ILL.
Phone: RAdcliffe 3-8313

WORLD'S FOREMOST PRODUCER OF MASONRY REINFORCING

• The Lindcraft Corporation has developed a new laboratory pug mill mixer particularly suitable for mixing small quantities of concrete. Of compact design, the pug mill mixer features a liquid-tight mixing chamber, a thoroughly guarded drive mechanism, and push-button start and stop. The ¾ hp. motor provides a variable-speed drive of 20 to 60 r.p.m., with other ratios available. Maintenance and upkeep costs are reduced because all component parts are standard items. The blades can be changed easily in the pattern of mixing and spacing in order to accomplish unusual mixing requirements. **(104)**

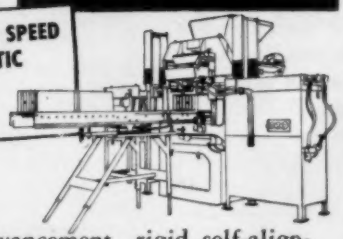
• Called the Hy-Lo, a low-cost, portable space heater manufactured by the Scheu Products Company features a patented Return Gas principle which is said to eliminate smoke and soot. Suitable for maintaining 24-hour safe curing temperatures for concrete block and masonry work, this oil-burning salamander throws a tremendous volume of both radiant and convected heat from its 5-ft. high stack. **(105)**



NOW! PRESTO BLOCK

with True Air Cavity, Moisture, Sound and Climatic Insulation Built-in . . .

PRODUCED BY HIGH SPEED . . . FULLY AUTOMATIC PRESTO BLOCK MACHINES!



Concrete masonry's most revolutionary advancement...rigid, self-aligning, easy-to-lay-up . . . enthusiastically endorsed by the building industry!

GET ALL THE DETAILS AND FRANCHISE MANUFACTURING INFORMATION TODAY! WIRE, WRITE OR PHONE:

© 1956 Presto Brick Mach. Corp.

PRESTO BRICK MACHINE CORPORATION

Empire State Bldg., New York, N. Y. • Pennsylvania 6-1353

For 50 Years

Dunn Machines Have Paced the Drain Tile Industry

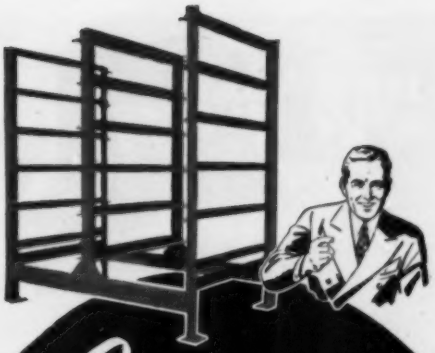
T-5

They have pioneered in the production of high quality tile—strong, dense, and truly round. They have influenced the greater use of concrete tile by lowered prices and easier availability. They have encouraged its manufacturing as a community enterprise. Efficient, compact, low-investment Champion plants, using local aggregates and local labor, pare production costs to the minimum. Effect tremendous economies in freight, distribution and breakage. Net results: lower costs to consumers, leading to increased sales volumes, and a generous margin of income for the manufacturer.

Investigate — today — the most profitable angle of the concrete products industry. Write for a copy of the Champion catalog.

W. E. DUNN MFG. CO.

532 W. 24th Street, Holland, Mich.
980 Dundas Highway, Cooksville, Ont.



Columbia HEAVY-DUTY RACKS ARE NOW AVAILABLE FROM OUR FACTORY BRANCH AT MATTOON, ILL.

Now . . . Columbia Heavy Duty Standard racks can be shipped to your plant within a few days after your order is received. Columbia can also custom design racks from your blueprints or measurements to fit your special plant requirements.

Racks are ruggedly constructed of high quality steel for all pallet and block sizes...and can be shipped sub-assembled for compact delivery and easier handling.

Send dimensions for your rack requirements to Columbia's engineering department. You will be furnished with prices at no obligation.

TURNTABLES

Ask about Columbia's new one, two and three-rack motor-driven "push-button control" turntables. Also available in manual, semi-portable and fixed position combinations.

District Offices in: Wisconsin, Illinois, South Carolina, Mississippi, Florida, New Jersey, Virginia, California, Massachusetts, Texas, Montreal, Toronto, Vancouver, B. C.

Columbia MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON
Factory Branch and Warehouse at Mattoon, Illinois.

• Called the Model 'M," an entirely new automatic electronic moisture control unit introduced by Edick Laboratories, Inc., places the right amount of water in the mixer for a perfect batch each time, in spite of extreme variations in aggregate moisture conditions from batch to batch. This control unit takes all of its electronic readings in the dry mix automatically before any water is added, calculates the volume of water still required, and adds this amount. A visual water gauge on the unit which indicates exactly the number of gallons of water being added to the mixer tells the operator when the weigh batcher is weighing water into the mixer in place of aggregate, thus cutting the yield. With this information the weigh batcher can be precisely adjusted and the yield held constant. **(106)**

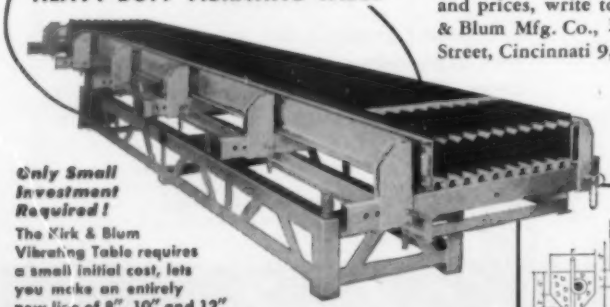
• Versatile in application, this new Cleaver-Brooks PS-125 portable steamer is particularly suitable for prestressed concrete pile driving applications. Rugged frame construction, simple controls, and low maintenance boiler design are among the features that contribute to the long life of the PS-125. **(107)**

Add a New Profit-Maker

increase your volume

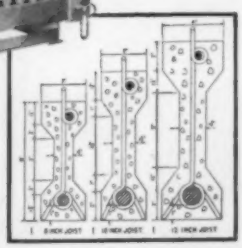
PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.



Only Small Investment Required!

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.



KIRK & BLUM

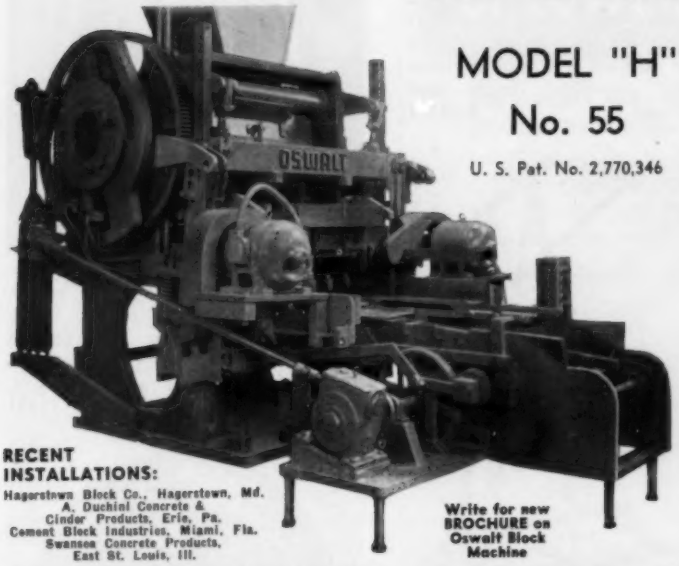
Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

• Designed by the S & M Manufacturing Company, Inc., for the hauling and placing of central mixed concrete and ready mixed concrete, this new truck body, known as the Agitor, can load in 4 seconds and discharge in 35 seconds 4 cu. yd. of low slump concrete. It can discharge slowly, using the agitator as a means of feeding the concrete from the body onto the wide, power-operated chute. The body, automatically cleaned out by the agitator, requires only a slight cleanup after use. **(108)**

• A new 300,000 lb. capacity testing machine introduced by Soiltest, Inc., makes possible accurate in-the-plant or on-the-job testing of concrete blocks up to 9 by 9 by 18 in. and concrete cylinders up to 8 in. in diameter by 16 in. long. Designated Model No. CT-900, the tester meets A.S.T.M. and A.A.S.H.O. specifications. Loads are read on an 8½ in. diameter test gauge which reads from 0 to 300,000 lb. capacity. The gauge is equipped with a maximum load pointer. Each testing is individually calibrated and guaranteed to be accurate to within 1 percent of indicated load. Variations in specimen height and size are compensated for by adjusting the spherically seated upper platen to position. **(109)**

MASSIVELY BUILT *for Heavy Duty and Longer Service*

OSWALT BLOCK MACHINE



MODEL "H"
No. 55

U. S. Pat. No. 2,770,346

The extra rugged construction of the Model "H" Oswalt Block Machine assures a big reserve of strength and power for increased production, reduced maintenance and lower block costs.

The stress-relieved frame is built a full two inches in thickness to give smooth, relaxed operation and long, economical service. Oversize shafts and gears, heavy base plate under entire machine, and finely engineered mechanical parts, all contribute to the superior performance of the Oswalt Block Machine.

These Exclusive OSWALT Features offer important operating advantages:

1. Improved Vibration and Production Speed-up
2. Shock-Free Ejector and Front-end Pallet Feeder
3. New Simplified Height and Density Control

RECENT INSTALLATIONS:

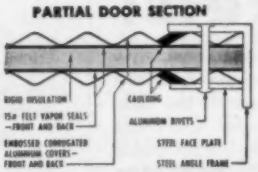
Hagerstown Block Co., Hagerstown, Md.
A. Duchini Concrete & Cinder Products, Erie, Pa.
Cement Block Industries, Miami, Fla.
Swansea Concrete Products, East St. Louis, Ill.

Write for new BROCHURE on Oswalt Block Machine

OSWALT ENGINEERING SERVICE CORP. 1335 CIRCLE AVENUE • FOREST PARK, ILL.
Phones: ESterbrook 8-4664 (Chicago) FOrest 6-2798 (Suburban)

Above: Universal Kiln Doors, Door Carrier Equipment, and Sliding Utility Doors at Cinder Block & Material Co., Indianapolis, Ind.

PARTIAL DOOR SECTION



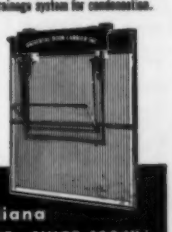
All welded and riveted assembly. Complete internal drainage system for condensation.

Kiln closure equipment is no place for tin-pan construction. Be sure the equipment *you* buy has the *guts* to give you efficient operation and long trouble-free service. Write, wire, or phone for detailed information.

Universal

KILN DOORS and DOOR CARRIERS

NEW *Uni-Seal Door Gasket and Cement—*
NEW *Uni-Coat Rust Preventive Coating*

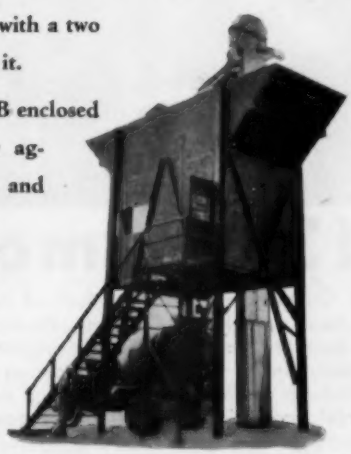


UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

WHEN 100-125 YARDS
A DAY IS ENOUGH—

The 47 Ton Simplex with a two yard batcher will do it.

Charged by two type B enclosed bucket elevators, for aggregate and cement, and equipped with a 100 Bbl. auxiliary cement storage (total capacity 175 Bbl.) and reclaiming equipment, the price is



FOB CAMDEN, OHIO $9753.00

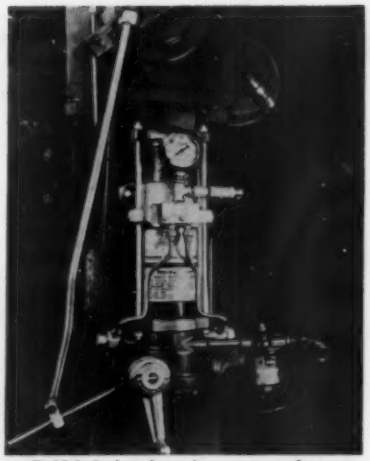
GWYNNE *Concrete Plants*

BIN BATCHER

J. H. GWYNNE, INC. CAMDEN, OHIO

• This International Harvester 300 utility tractor with a 16½-ft. Kirkhof fork lift, shown elevating block, brick, and mortar to building level in the construction of a large one-story building in Benton Harbor, Mich., supplied materials to 20 men, each laying 300 blocks per day. Tractor differential gears have been reversed to give five speeds in reverse and one forward. Reverse steering equipment enables the operator to face the fork lift as he drives. A special protector shield overhead protects the driver from possible falling materials. (110)

• An all-purpose portable crane weighing only 350 lb. has been designed by the Sasgen Derrick Company. The crane will carry a 3,000 lb. load on a single line with only one man at the crank. The crane, useful in many lifting and materials handling operations, can be used to handle concrete block, pipe, and joists. A patented Safety Spur Gear Winch requires only seven turns of the crank to gain a complete drum revolution, providing faster and easier lifting. (111)



• Self-lubrication is a new feature of the Besser Vibrapac. The Vibrapac lubricates itself at regular intervals while in operation, resulting in constant, smoother operation and longer service from working parts. (112)

• A new direct-reading meter which records the actual hours and minutes of engine operation has been developed by the John W. Hobbs Corporation. The small, compact meter registers up up to 10,000 hours, then returns to zero. (113)

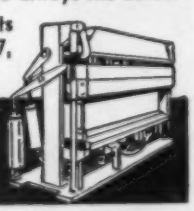
• This control relay, a new product of the Excel Electric Service Company, Inc., measures variations in height of materials in bins. Level control can be from a fraction of an inch to several feet. (114)

Pull a lever and there are the lintels . . . on the PreCaster

133% more lintels!

• Compared to the 200 feet of lintels made by hand by one man in a 9-hour day, Radel Concrete Products, Cincinnati, believes their two-man 9-hour production of 750 feet of lintels on the *PreCaster* is worth the consideration of every forward-looking block manufacturer. Radel Concrete Products emphasizes that their high standards may keep down their *PreCaster* lintel production record. ***But it now averages about 133% more than hand production.*** Radel also testify that lintels made on the *PreCaster* match color and texture of their regular blocks. And they are always the same!

• Get the full story how you can up your 1957 profits from PreCaster, Inc., 5217 Beech Street, Cincinnati 17, Ohio.



PRECASTER

New Literature

Inexpensive forms for the precision manufacture of precast concrete double-tee slabs are described in a bulletin published by the Irvington Form and Tank Corporation. Illustrations and sizes are included. **(115)**

Solvent "E", a concrete dissolving powder, has been developed by Edick Laboratories, Inc., for the fast, safe removal of concrete from all equipment and machinery. Literature from the manufacturer gives advantages, applications, and directions for use. **(116)**

Blok-Seal, a water-resistant paint for any concrete masonry surface, provides a durable and washable surface for both interior and exterior. The Carter-Waters Corporation offers a descriptive brochure which includes directions for application. **(117)**

Catalog 89, available from the Orton Crane Company, describes the advantages of the application of modern handling and control devices to heavy cranes of 75-ton to 250-ton capacities. The bulletin also discusses construction and safety factors. **(118)**

Molds for decorative masonry units for gardens, estates, and parks are pictured in a folder available from the Concrete Machinery Company, Inc. The company manufactures design molds for flower boxes, pedestals, and bird baths. **(119)**

When repairing with Laticrete, a new low-cost latex-based surfacing compound, developed by the Naugatuck Chemical Division, U. S. Rubber Company, a layer of ¼ in. over the damaged concrete results in a good bond and will withstand moderately heavy traffic. **(120)**

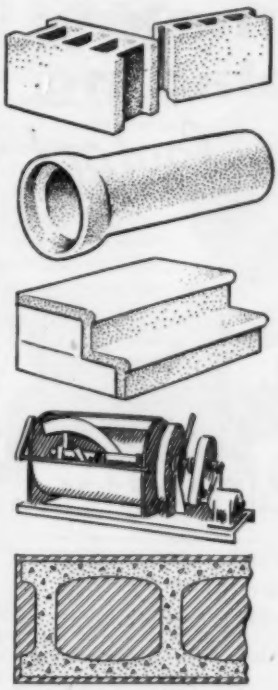
A new expansion joint material that provides good bond to concrete, masonry, or steel surfaces has been produced by the A. C. Horn Company, Inc., subsidiary of the Sun Chemical Corporation. Extremely durable, it makes virtually permanent joints possible, and insures a lasting seal against the entry of water. **(121)**

An operator's manual for owners and operators of Towmotor fork lift trucks is available from the Towmotor Corporation. The booklet includes specifications and construction features, in addition to operating instructions, safety tips, and proper handling techniques. **(122)**

How Some Manufacturers Make *BETTER* Concrete Products at *LOWER* Cost, with *FLY ASH*

Fly Ash is a low-cost product. It is an extremely fine, wettable powder, mainly silica and alumina. Most of its particles are spherical in shape. It is a highly effective Pozzolan.

Many alert manufacturers, using a percentage of Fly Ash with the Portland cement, turn out a concrete of equal or improved qualities at a substantial saving in cost of materials.



Compressive Strength: Fly Ash Increases It

Many independent tests on concrete products made with a percentage of Fly Ash have shown equal or better 28-day compressive strengths as compared to those made with straight Portland cement. There is little or no reduction in 3-day strengths, especially where steam curing is used.

Sulfate Resistance: Fly Ash Improves It

Sulfate resistance is highly important in concrete sewer pipe. Tests on specimens of concrete containing a portion of Fly Ash showed greater resistance to the action of sulfate waters than did straight Portland cement concrete.

Finish and Texture: Fly Ash Makes Both Better

Comparisons show that concrete products made with mixes containing a percentage of Fly Ash have sharper edges and corners . . . smoother, more uniform surfaces . . . than products made with straight Portland cement.

Life of Machines and Moulds: Fly Ash Lengthens It

Fine, spherical particles of Fly Ash have a "ball bearing" action which increases flow and plasticity of the concrete and reduces abrasion. This means less wear on mixer blades, hoppers and moulds—longer life of your equipment.

Filling Moulds and Frames: Fly Ash Helps It

The greater plasticity of concrete containing Fly Ash reduces adhesion to pallets, and permits faster and more complete filling of moulds.

FLY ASH improves Compressive Strength, Texture, Finish, Sharpness of Edges and Corners, and Uniformity of Color of the Concrete.

FLY ASH increases "Green" Strength, Resistance of the Concrete to Penetration by Water, and Resistance to Action of Sulfuric Acid and Sulfates.

FLY ASH reduces Cost of Materials, Maintenance on Wearing Parts, Sticking to Pallets and Moulds, Cracking in Handling of the Concrete.

Write for Information or Technical Help

It costs nothing to get the facts on Fly Ash; it might mean a great deal in the success of your operation. Contact any of the following for specific information and technical data on use of their Fly Ash of proven performance.

CHICAGO FLY ASH COMPANY
228 N. La Salle St., Chicago 1, Ill.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pennsylvania

DETROIT EDISON COMPANY
2000 Second Ave., Detroit 26, Mich.

ATLAS FLY ASH, INC.
2450 William St., Buffalo 6, N. Y.

Prestressed Concrete Structures

(*From page* 194)

the third points in the sections. As one section hardened, the header would be removed and the next section cast against it. After the whole beam had hardened, it was broken apart at the third points. It was then taken about 20 miles to the point of erection, and each section was fitted together much as one would put a broken cookie together, so that the crack wouldn't show.

We have also developed in Wyoming County a block type of abutment which we have found to be very convenient and economical. When these abutment blocks are used, the cable is anchored into the footer and threaded through holes in the fins on the back of the blocks. This year we have built several abutments which were only 4 ft. 6 in. or three blocks high and used 1-in. deformed reinforcing bars, anchored and imbedded in the footers, for the tendons. With this limited height, prestressing was not considered necessary.

With post-tensioned prestressed concrete, the only special equipment necessary is a Freyssinet jack, a high-pressure hydraulic pump, and a grouting tank or bottle. Our grouting bottle is made of an old air tank from a junked power roller. A cone was welded onto the bottom of the tank and a lid fitted on the top, so that thin grout could be forced into the cables under air pressure of about 80 p.s.i. After stressing, the cables are always grouted with a mixture of two parts cement and one part sand, mixed to the thickness of very heavy cream. The cavities are first filled with water, which prevents the grout from drying out and sticking around the cable on the way through the cavity.

The only special materials necessary for the construction of prestressed concrete are the anchors and the cables. These materials and the necessary equipment may be easily obtained from the Freyssinet Company. The equipment can be rented from them at very nominal rates.

So far in Wyoming County we have built two T-beam bridges and ten smaller bridges with spans from 20 to 40 ft., using rectangular beams. On one of the 40-ft.-span bridges we used rectangular beams 17 in. deep and 30 in. wide, with two rows of 10-in. diameter sonovoids or cardboard tubes in each beam. The only difficulty we had with the sonovoids was in anchoring them down securely enough, so that they would not float out of the concrete as it was being poured.

There is no doubt about the economy of prestressed concrete. A strictly impartial comparison of various items of construction is very difficult because the design throughout differs so completely from other types of construction. However, an idea of the cost per square foot of opening should give a good basis for comparison with other types. It should be borne in mind that all of the bridges mentioned had a clear roadway of 22 ft. except one, which was 28 ft. All of them were built on piling averaging 20 ft. in length. Footers in each case were 4 ft. deep and abutments varied from 4½ to 10 ft. in height. In most of the smaller bridges the decking (which includes practically the entire superstructure) cost about $24 per square yard. The cost per square foot of opening varied from $32.83 to $84.95, with an average of $54.24. The cost per foot of span varied from $262.66 to $971.63, with an average of $496.95.

The engineering and sales divisions of Texcrete Structural Products Co., Dallas, have been transferred to new quarters at 2230 Chalk Hill Rd.

Texcrete produces long and short span roof and floor channels, prestressed girders, and precast highway bridges.

How Willard makes concrete placing *easier... faster!*

5½ C.Y. WILLARD with fluid drive

HELPER FINS at mouth of drum discharge smoothly without surge.

SINGLE LEVER CONTROL operates throttle and drum brake.

DRUM BRAKE prevents roll back and concrete re-surge.

CLUTCH ACTS AUTOMATICALLY when shifting gears to mix or discharge.

EXTRA LONG CHUTE is 17 feet with extensions.

HYDRAULIC LIFT ARM raises or lowers end of chute for accurate placing.

See your local Willard dealer or write for descriptive bulletin.

Member: T.M.M.B.

Manufactured in Los Angeles, California and Galion, Ohio

WILLARD CONCRETE MACHINERY COMPANY

11700 WRIGHT ROAD, LYNWOOD (LOS ANGELES COUNTY), CALIFORNIA

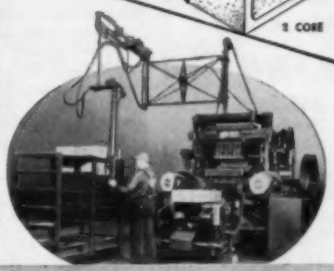
WILLARD TRUCK MIXERS

Concrete Filler Block for *Fire-Safe* FLOORS and ROOFS

Why make only the walls of a new building fire-safe and permanent? Why not also apply these practical advantages to the floors and roofs? Concrete Filler Block, produced on a Besser Vibrapac, make it possible for the ENTIRE structure to be fire-safe and permanent . . . at LOW COST.

ALL made on a BESSER VIBRAPAC

Concrete Filler Block are made on a Besser Vibrapac . . . the same dependable machine that produces high quality concrete load bearing block for walls. And the same Plain Pallets are used. All types of filler block can be made in various sizes to coordinate with other modular materials and for all load conditions. Block plant operators can materially add to their profits by supplying their customers with BOTH wall and floor units. For further facts, contact your nearby Besser representative, or write:



Vibrapacs are versatile. They make ALL types and sizes of block on ONE set of Plain Pallets. Fully automatic. Off-bearer removes finished block with power hoist. No manual lifting.

BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.

A 8585-½-H

Concrete Manufacturer Classified Section

431 S. DEARBORN ST., CHICAGO 5, ILL.

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FOR SALE
BERGEN TRI-MATIC BLOCK MACHINE

•

Front Pallet Feeder, Zeromatic Control, and Offbearing Hoist, used less than 11 months.

•

Box CM-1182, c/o THE CONCRETE MANUFACTURER
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SMALL MODERN BLOCK PLANT WITH STEARNS ZIPPER BLOCK MACHINE. SOUTHERN MICHIGAN RESORT AREA. PRICED TO SELL.

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Block plant, fully equipped with 2 block plain pallet machine, Dunbrik machine, drain tile machine, fork lift, Truckman platform truck, 2 water systems, large plant, steam kilns, 4½ acre site on R.R. Located 40 mi. from cement supply, 25 mi. from population center Eastern U.S. in Virginia.

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"Go Corp King" less than 4 years old, with mold box.
"Go Corp Rackman" less than 2 years old. Priced to sell.
1 Bickerstaff Automatic Fork.....@ $200.00

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Exceptional opportunity for the right man.

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2 Besser Vibrapacs complete, equipped with M&M system of height and density control & off bearers. One machine in central Illinois, one in Washington, D.C. 22 molds for above machines including headers, Dox plank, Brick, etc. These molds all in very good condition, some new, most with vibrators. Also stock of new spare parts. Any of the above may be purchased separately.

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Splash-Blocks • Step Treads
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Chimney Caps • Wall Cap
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Special Molds Made to Order!

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54" to 72" Concrete Pipe Molds
Tongue & Groove type
Fork Lift truck, 5000# capacity
low headroom, pneumatic tires

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All shades and grades the highest quality. *Write for color cards, prices and samples*

RICKETSON MINERAL COLOR WKS.
MILWAUKEE 2, WISCONSIN
Established 1885

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1 L-2 LITH-I-BLOCK machine with automatic pallet return
1 30 Cu. Ft. Multiplex mixer
40 72-block steel racks
1440 New ¼" x 18 x 22 steel pallets
1300 Used 5/16 x 18 x 22 steel pallets
Extra mold boxes and attachment to make all sizes blocks. Also brick.

All in good condition, reasonably priced. May be inspected at our St. Louis plant.

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SWAP — SELL — BUY

BLOCK MACHINES

Stearns #7 & 9 Jolterator ..... $500.00 each
(Jolterate owners at this price buy one for spare parts.)
Mold Boxes #7 & 9..... 180.00 each
1—12 cu. ft. Kent Mixer with motor... 450.00
1—Y-40 Truckman Fork-Lift 4000 lb. capacity 3500.00
1—George 28 cu. ft. Concrete Mixer... 750.00
1—Continuous Mixer 150.00
2—Air Offbearers Stearns #7 & 9.... 250.00 each
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100—Racks for cored steel pallets..... 10.00 each
100,000 pressed steel pallets in stock (Send tracing or sample for quotation).

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Mr. McCaughey

Send in list of equipment you need. If we don't have it in stock, we usually know where we can find it at a bargain.

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155 King St. E. Toronto Ont., Canada
Phone EM. 4-5816

FOR SALE

Stearns 50-1 w/pallet return 4, 8, 12 & flue molds.
GO-Corp Prince w/off bearer 4, 8, 12 & flue molds.
2—Multicos two blocks w/molds and off bearers.
Lith-I-Block 2 block w/molds.
Van-U-Matic w/molds & off bearer.
1,500 ¼x18x18 steel pallets.
50-60 block racks.
Several mixers.

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Plant Design Layout Machinery Block

WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY
Specialists in Concrete Products Equipment
Eastern Representatives of the
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Elevators Bins Conveyors Feeders

PLAIN STEEL PALLETS

Guaranteed Quality
Flat • Square • Accurate
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CONCRETE BLOCK MACHINE FACTORY RECONDITIONED

FMC-180, plain pallet block machine, guaranteed. Comes complete with motors and mold box. Capacity 1400 blocks daily. $2750.00. Financing available.

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CUBA, MISSOURI

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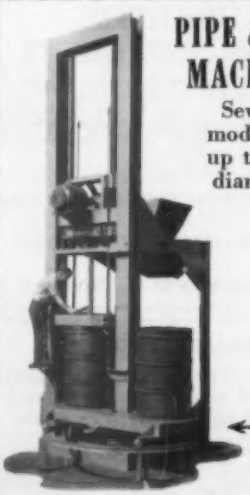
Several models — up to 36" diameter



Model 6-24, Makes up to 24" diameters and lengths up to six feet. Rubber gasket or plain.

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Autoclaves
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Dryers

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Special Service to manufacturers of concrete products with a full range of colors that are Guaranteed Permanent — Fadeless. Write today for Prices.

LAMBERT CORPORATION
HOUSTON, TEXAS • ORLANDO, FLA.

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NEW LOW PRICE

NEW YELLEN Hi-SPEED PLAIN PALLETT BLOCK MACHINE

THE NEWEST LOW COST PLAIN PALLETT MACHINE THOROUGHLY TESTED PROVEN

JOHN J. YELLEN

PERTH AMBOY, N. J.

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1 Tandem Drive White, 3 Cubic yard Jaeger Mixer
1 Tandem Drive Autocar 5 Cubic yard Jaeger Mixer
1 K8 International 5 Cubic yard Jaeger Mixer
1 Autocar Half track
1 D H 9 High Lift

All equipment is in good condition, is in use every day.

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Phone BRidge 1-8329

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As we are installing larger Stearns equipment, we have the following good used equipment for immediate sale:

1—GEORGE PRESS PAC, Model 500A, automatic plain pallet (2 unit) block machine with complete attachments for:
Two 8" x 8" x 16" two core, double corner units.
Two 8" x 4" x 16" two core, half height units.
Four 4" x 8" x 16" cored units.
One 16" x 16" chimney unit.
One 16¾" x 16¾" stepping stone.
Mold conversion parts for 8" halves, sash, and F.H.A. jamb, and, also 4" halves, three-quarters and solids.

1—KENT 12 cu. ft. capacity V-belt drive mixer, with motor.

1—16 Ft. Belt conveyor, with motor.

750—¾" x 18" x 18" Aluminum plain pallets. Steel racks to accommodate the pallets.

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packer-head wings

Proved to last as long or longer — yet cost considerably less. Write for prices.

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THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

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•
Send for Free Bulletin

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1020 N. Raymond Rd. Battle Creek, Mich.

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unbreakable

PALLET RINGS

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

MINERAL COLORS

for

BRICK MORTAR STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

PLAIN PALLET CLEANING

We truck our machine to your plant and supervise entire cleaning and planing off of pallet residue. No need to shut down as we will keep up with production.

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Approximately 4000 ¼ x 18½ x 26 steel pallets less than 1 year old in clean condition. Can be seen in operation. Selling price, $1.50 each.

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Ideal for split rock and standard block. 8" block has "U" factor below .30 BTU per sq. ft. per hr. cores unfilled. Grade ⅜" to fine $1.75 per cu. yd., mine run $1.50, FOB cars Domingo, N.M. Freight rates on request. Produced by block manufacturers.

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FOR SALE

L-5 Lith-O-Bar Block Machine, 1954 Model, 3 blocks at a time—720 per hour—in good condition. Also, 20 H.P. Ingersoll Rand Air Compressor with Air Receiver, in good condition—priced reasonable.

SPEIGNER CONCRETE BLOCK CO.
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COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:
LANDERS-SEGAL COLOR CO.
71 Delavan St. • Brooklyn 31, N. Y.

NOW MORE THAN **150** *LICENSED MANUFACTURERS*

Producing
Patented
homeward ®
***Concrete* STEPS**

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

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® homeward is a Registered TRADE MARK

JOHNSON all-welded ELEVATOR BUCKETS

- smooth — fast-filling, quick-cleaning
- light in weight, high-strength, durable
- heavy-gauge, long-wearing lips, ends
- cement: 10x6, 12x7, 14x8, 16x8"
  aggregate: 10x6, 12x7, 14x8, 16x8"

Long-life CHAIN

- carburized steel knuckles
- med.-high carbon side bars
- alloy heat-treated ⅝" pins
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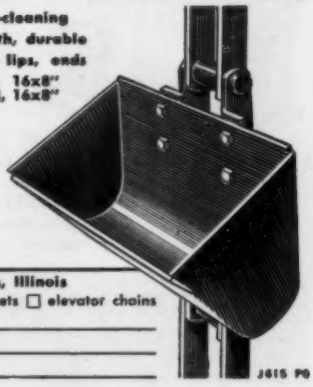
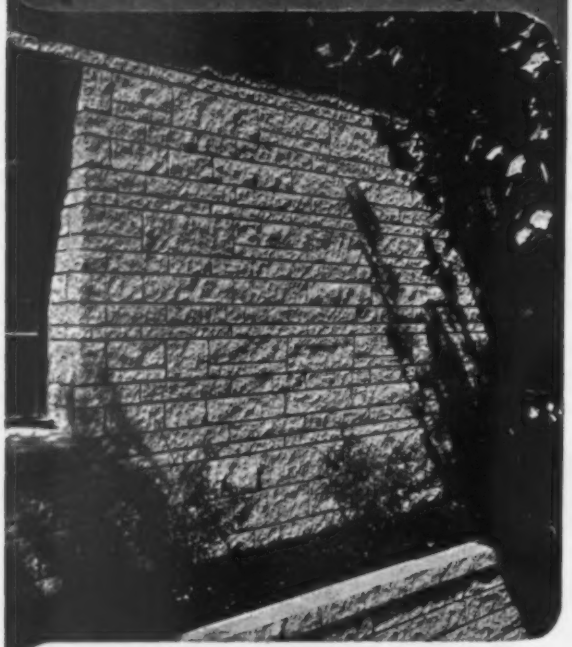


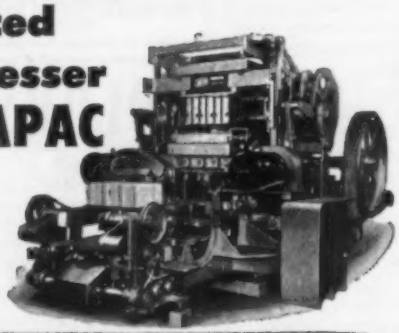
C. S. JOHNSON CO., Champaign, Illinois
Send more information on: ☐ buckets ☐ elevator chains
NAME_____
STREET_____
CITY, STATE_____

J615 PQ

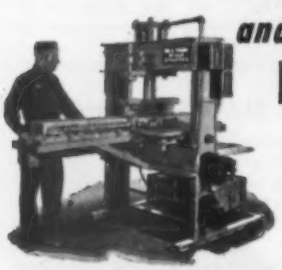
Give Customers Beautiful Split Block Like This—



made from Block produced on a Besser VIBRAPAC



and Split on a BES-STONE Block Splitter



Yes—split block *is* beautiful if it's made *right*, using a Besser Vibrapac and Bes-Stone Splitter—the combination that gives you NEW PROFIT OPPORTUNITIES plus SATISFIED CUSTOMERS. Get all the facts from your nearby Besser Representative, or write for literature to:

BESSER COMPANY

Complete Equipment for Concrete Block Plants

ALPENA, MICHIGAN, U.S.A.

Concrete Manufacturer

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Lay Brick and Concrete Blocks at 20° above zero

Forrer's Accelerator

for Concrete and Mortar

Now, with Forrer's new Accelerator, for Mortar and Concrete, you can lay blocks safely down to 20°F. For, this newly improved Accelerator actually lowers the freezing point of the water in the mix and speeds up setting time. Forrer's Accelerator increases strength and workability; brick mortar becomes easier to work; concrete easier to pour. Result: extra jobs and no delays in below freezing weather.

Solves Freezing Weather Worries

Solution is available in handy 1, 5, 30 and 55 gallon drums. Rust inhibitor added prevents it from affecting reinforcing steel or tools.

DEALER'S WANTED!

Attention Concrete Block manufacturers— For extra sales — sell Forrer's Accelerator. Stock up now for cold weather.

— Attractive Territories available for Distributors —

Forrer's
PRODUCTS FOR MASONRY
SINCE 1926

FORRER'S — Division of SPRAY-O-BOND CO.
2225 N. Humboldt Ave., Milwaukee 12, Wis.

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new!

HIGH TINCTORIAL STRENGTH

SYNTHETIC IRON OXIDES

Use 1/3 to 1/2 as much as other Synthetic Iron Oxides in your concrete products to produce the same shade.

"HTS" Oxides will produce:

Light to Dark Browns—Buffs—Suntans—Corals — Goldenrods — Terra Cotta — Black and Grays.

Write us or our nearest representative for working samples and more detailed information

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Meadow Road
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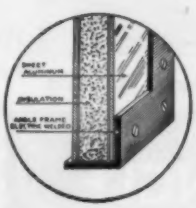
Moore Carrier-Type Doors at Maule Industries, Miami

Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs — inside the kiln — with Moore Aluminum-Insulated Doors. They improve curing conditions — save steam — last longer.

Send us dimensions of present door openings for quotation.

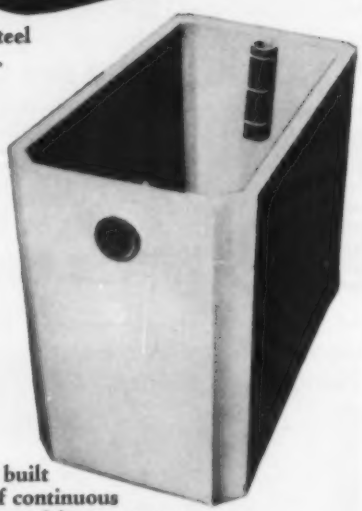
MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE, FLORIDA · BRAMPTON, ONT., CANADA · VANCOUVER, B. C., CANADA · NORTH PORTLAND, OREGON

THE SMITH
SEPTIC TANK FORMS
AND TRUCK HANDLING RIG

From the SMITH steel septic tank form . . . to the finished reinforced concrete septic tank . . .



for production of 500; 600; 750 and 1,000 gallon units

SMITH truck rig is built to give many years of continuous service. Entirely operated by one man.

Write Today for Complete Details

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CONCRETE PRODUCTS CO., INC.
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Phone 1697 P.O. Box 360

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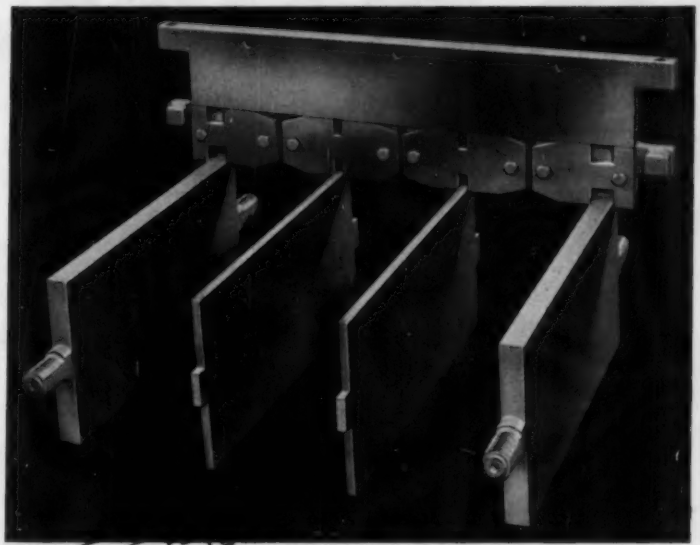
For Fast Results . . .

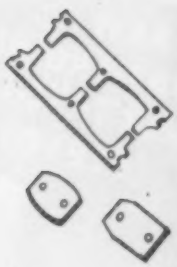
ADVERTISE YOUR
USED EQUIPMENT IN
THE CONCRETE MANUFACTURER'S
CLASSIFIED SECTION

"The Marketplace of the Industry"

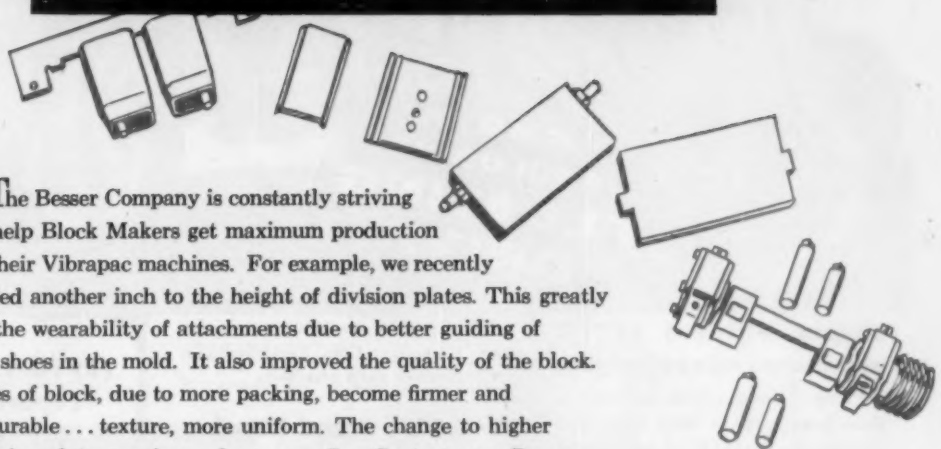
New Higher Division Plates
Step Up Quality and Production!



VIBRAPACS
Run Smoother
with
Genuine
BESSER PARTS

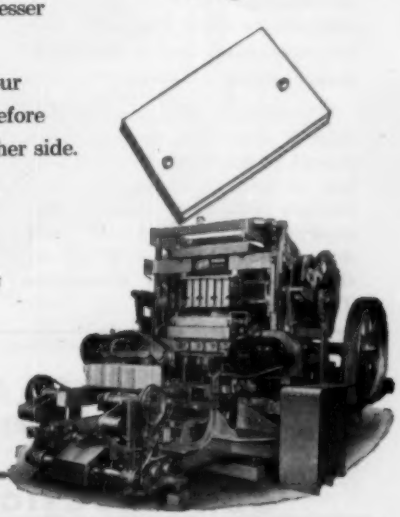


PART NUMBERS
Outside Division Plates
No. 55312
Inside Division Plates
No. 58980
Cut-off Bar
No. 57768
Outside Cut-off Shoes
No. 57769
Inside Cut-off Shoes
No. 57770



The Besser Company is constantly striving to help Block Makers get maximum production from their Vibrapac machines. For example, we recently added another inch to the height of division plates. This greatly increased the wearability of attachments due to better guiding of stripper shoes in the mold. It also improved the quality of the block. Edges of block, due to more packing, become firmer and more durable . . . texture, more uniform. The change to higher division plates can be made very easily. Contact your Besser representative for details.

Tip to Block Makers — You can get double duty from your cut-off shoes if you change from one edge to the other. Before wearing ⅛" on one side, turn cut-off shoe over and use the other side.



BESSER Company

BOX 131, ALPENA, MICHIGAN, U.S.A.

Complete Equipment for Concrete Block Plants

BESSER Genuine PARTS

GENUINE VIBRAPAC PARTS
ARE MADE ONLY BY BESSER

A 8876-1PC

the advanced

FEPTO* TRANSCRETE®

. . . combines 2 great engineering triumphs that drastically reduce operating and maintenance costs . . . INCREASE PROFITS!

Simple, efficient FEPTO eliminates mixer engine

Photo above has been cut away to show how power is taken from front of truck engine (FEPTO) and carried efficiently to drum drive unit. This eliminates mixer engine, greatly reduces operating and maintenance costs.

With CMC FEPTO drive, speed of drum is subject only to truck engine throttle variations. Regardless of truck gear or speed, mixer runs well within desirable limits for all phases of operation—provides the same FAST charging — THORO mixing — QUICK discharge performance of conventional Transcrete Models.

Standard off-the-shelf automotive parts are used in CMC TRANSCRETE take-off drive shaft assembly.

CMC FEPTO and Floating Drive make unbeatable savings combination

No other truck mixer on the market today offers a combination that provides such flexibility and economy of operation. CMC's unique Floating Drive eliminates ALL the troubles of ordinary rigid drives. Easiest, fastest of all to adjust — only one nut to turn for normal chain adjustment.

CMC FEPTO TRANSCRETES are available in 5 to 7-yard capacities.

FEPTO Transcrete users report as much as

$55 Per Month Gas Saving

PLUS savings in oil, maintenance, repair and service of mixer engine.

PLUS savings of CMC Floating Drive which eliminates down time due to chain failures, broken drives, complicated time-consuming adjustments, etc.

Get full details today on the NEW CMC FEPTO TRANSCRETES. Write for FREE ILLUSTRATED FOLDER.

CONSTRUCTION MACHINERY CO., Waterloo, Iowa

Lith-I-Block Machine

. . . . ITS OWN BEST SALESMAN!

John Holtrop, Pres.
Holtrop Concrete Products, Inc.
Ferrysburg, Mich.

TELEPHONE 8888

HOLTROP CONCRETE PRODUCTS, INC.
FERRYSBURG, MICHIGAN

October 3, 1956

Lith-I-Bar Company
345 W. 11th St.
Holland, Mich.

Gentlemen:

We installed our first Lith-I-Block machine over five years ago and found the answer to our production problems. Our first machine, a two-blocker, was soon found to be too small, so in 1953 we installed the larger machine.

We find no difficulty in exceeding the rated capacity of the machine and it will do it hour after hour. The blocks have a uniform texture which is proof of even and proper vibration. The lightweight unit made on this machine is a beauty.

Our contractor customers actually compliment us on the square corners and clean sharp edges. Our repair cost and down time have never been as low.

Our association with the Lith-I-Bar Company has been very pleasant, from top management to sales and service departments. When problems do arise they go all out to do everything in their power to insure customer satisfaction- and we are one satisfied customer.

Very truly yours,

HOLTROP CONCRETE PRODUCTS

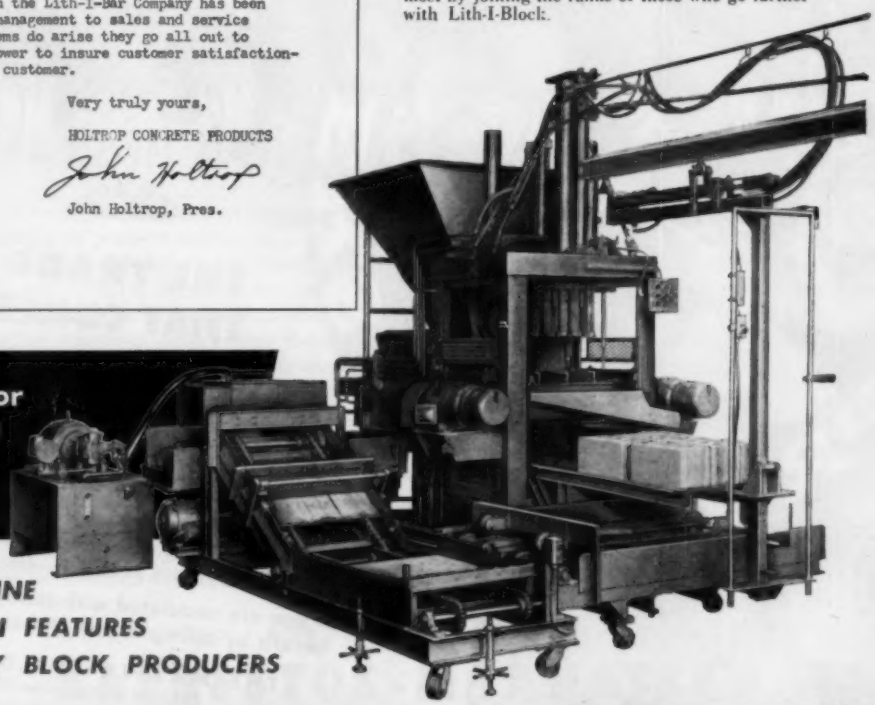
John Holtrop

John Holtrop, Pres.

LITH-I-BAR COMPANY RECEIVED OCT 5 1956

SEE IT IN ACTION — AND PROVE IT TO YOURSELF!

Lith-I-Block Machines have what it takes to make their users enthusiastic, as indicated by Mr. Holtrop's letter. They like the reserve speed, which gives them the leeway to exceed the rated capacity. They appreciate the careful engineering which has gone into the machines, which cuts down repairs and saves them money on down-time. They are "high" on the special features, such as the exclusive Four-Point Automatic Height Control, the Quick-Change Mold Box, and the many other proven advantages of this advanced volume producer of bonus-quality block. And they all speak about the way the Company backs them up with Service. So, — why don't you check with the Lith-I-Block producer, and learn first-hand why you, too, will profit most by joining the ranks of those who go farther with Lith-I-Block.



HYDRAULIC or AIR POWERED 2 or 3 BLOCK MODELS

THE BLOCK MACHINE WITH THE PROVEN FEATURES MOST WANTED BY BLOCK PRODUCERS

SALES AND SERVICE THE WORLD OVER

LITH-I-BAR COMPANY

HOLLAND · MICHIGAN

ONE PIECE OF EQUIPMENT OR A COMPLETE PLANT LAYOUT

LITH-I-BAR CO. HOLLAND, MICH.

Send me latest bulletins on Lith-I-Block Machine.

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY & STATE_____

THE TRADE MARK THAT COMES TO LIFE . . .

. . . to serve you with products that aid in obtaining, more economically, the qualities you want in concrete.

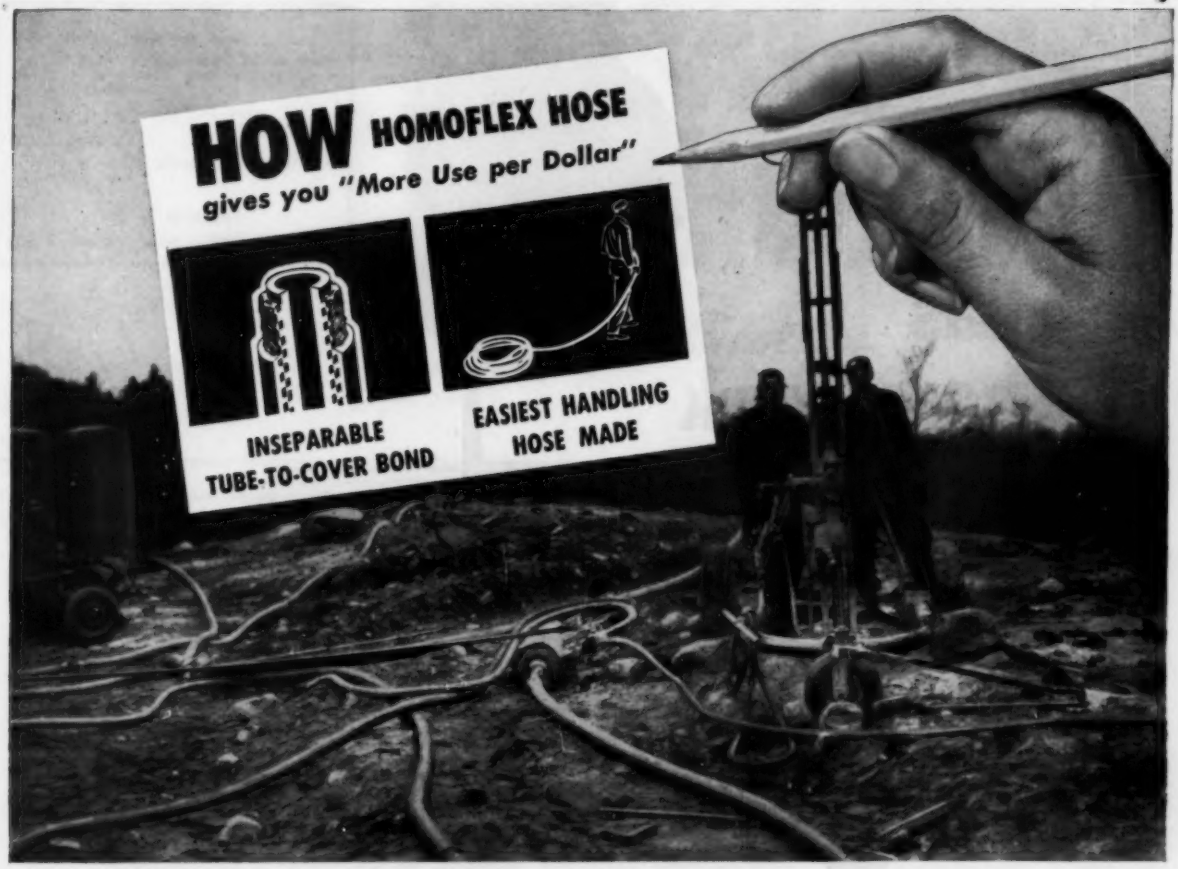
Our half century of experience is promptly available for:

1. product-selection consultation
2. product-use service on the job . . . through the 43 branch offices shown here staffed by more than 100 Master Builders skilled fieldmen.

If you are associated with concrete in any way, you will benefit by calling in one of these men.

THE MASTER BUILDERS COMPANY
Division of American-Marietta Company
CLEVELAND 3, OHIO • TORONTO 9, ONTARIO

POZZOLITH • MASTERPLATE • EMBECO and other products for the improvement of concrete and mortar.



Flexible Homoflex Hose Takes Rough Handling!

Homoflex Hose offers a combination hard to beat for rugged use. It is engineered to provide maximum flexibility and light weight for easy handling—yet it's rugged and strong to take a beating when it has to be handled roughly on the job. That's why users specify Homoflex for use with air tools, or wherever heavy duty hose is required to handle air, water, and other fluids and gases.

"As flexible as a rope," workers on the job say, because Homoflex Hose coils and uncoils freely in any direction. This mandrel-made hose has no pre-set twist. It resists kinking and eliminates the internal strain that can lead to hose rupture. Specially designed super-strength cord braid is precision applied at just the right angle to permit the rubber tie-gum to completely penetrate and bond the braided plies during vulcanization. This homogeneous inseparable tube-to-cover bond gives Homoflex its extreme flexibility, strength and long durability. Its uniform inside diameter makes easier the fitting of couplings and insures faster flow. Homoflex Hose cuts hose costs because it gets more work done and it lasts longer.

Ask the R/M representative about easy handling Homoflex Hose for your operations. He can also show you advantages of new burst resisting Super-Master BW Hose, the extra heavy duty braided wire inserted construction for high pressure air, water and steam service. General service or special duty, there's an R/M hose engineered for your operations . . . to give you "More Use per Dollar."

RM642

R/M

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Laundry Pads and Covers • Bowling Balls

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America has homework to do!

THERE'S PROBABLY a lot about your town that makes you want to brag a bit about it.

But there's one thing you *can't* be proud of. And it's a shame you share with just about every other community in America.

The homes where far too many people live are a disgrace. Slums, semi-slums, housing blight are with you. Fixing them up is the homework to be done.

If your town is like most in the U. S., here's what the figures show: 1 out of every 10 homes are rock-bottom slums. Nearly one-half urgently need basic repairs.

But slums are something that is happening on the other side of town, you may say. The problem isn't mine.

Slums are YOUR homework

Distance is no barrier against the threat and cost of housing blight.

Your taxes go up because it takes more money for your town to fight the diseases and delinquency and poverty spawned in the slums. The security of your family goes down because the slum is the natural parent of crime.

Where your business comes in

Every firm has a responsibility toward the town where it's located. Part of it is to support community improvements as any other good citizen would.

Some slums are beyond repair. They must be torn down and a fresh start made. Others can be made to conform to accepted living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Civic and individual groups must have business backing . . . *your* firm's backing if they are to succeed.

Follow the course of Action!

A group of Americans from every walk of life has joined together in a non-profit organization to combat home and community deterioration, A.C.T.I.O.N., the American Council To Improve Our Neighborhoods.

Send today for a free copy of "ACTION." It explains what A.C.T.I.O.N. is and proposes to do. It lists booklets, research, check-lists, and other material which can help you. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

ACTION

American Council To Improve Our Neighborhoods

Advertising rate per issue:

$10.50 per column inch. Lower rates for larger space used and/or on a contract basis.

Write for rate card.

Closing date:

20th of month preceding date of publication.

PIT & QUARRY
431 S. Dearborn St. Chicago 5, Ill.

BROADCAST

Section

MECHANICAL ENGINEERS

DRAFTSMEN

ESTIMATORS

WITH HEAVY MACHINERY EXPERIENCE
CEMENT PLANT EXPERIENCE PREFERRED
PERMANENT POSITIONS WITH MACHINERY MFR'S
NEW YORK OFFICE
INSURANCE BENEFITS

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SEND RESUME AND SALARY DESIRED TO:

BOX PQ-1042, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

PROJECT ENGINEER WANTED

Graduate Mining, Metallurgical, Chemical or Mechanical Engineer, preferably 25 to 35 years old, wanted by medium size progressive heavy machinery manufacturing company located in Southeastern Pennsylvania. To assist in design and preparing for market of various lines of equipment used in mineral dressing, heavy chemical, cement and rock products industries. Must have had engineering and field experience, and be willing to work on drafting board, travel and do field service. Opportunity also exists for a properly qualified individual, eventually to become a sales engineer. Salary open.

BOX PQ-904, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

30" Superior McCulley Gyratory Crusher, with 150 Horsepower Motor —$24,000, central Missouri.

BOX PQ-1102 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Are you a

METALLURGICAL ENGINEER

seeking an opportunity for Recognition leading to Advancement?

Your opportunity could be with us!

We're small, but plenty big in sales and reputation! . . . An important point because sincere effort and evident ability will win quick RECOGNITION.

Some travel involved; providing you with diversified, interesting contacts with responsible engineers in many different fields.

Good starting salary, many company benefits . . . and the opportunity to associate with a progressive Milwaukee manufacturer.

We need a recent engineering graduate for ore dressing metallurgical test work in our modern laboratory.

Have you these qualifications?

. . . Up to five years' of practical metallurgical experience.
. . . Familiarity with milling processes and mineralogy, and
. . . An inclination towards Sales Engineering? IF so,

SEND RESUME FOR IMMEDIATE CONSIDERATION TO:

BOX PQ-1242 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Professional Services

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer
75 Second St.
Newburgh, N. Y.
Phone: 1828

9 South Clinton St.
Chicago 6, Ill.
Ph. FR 2-4186

Construction
Design
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JOHN F. MEISSNER ENGINEERS INC.
CONSULTING & DESIGNING ENGINEERS
BULK MATERIALS HANDLING
SPECIALISTS IN DESIGN OF CRUSHED STONE, SAND, GRAVEL AND READY MIX PLANTS
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FOUNDATION TESTING, CHEMICAL ANALYSIS
CORE DRILLING
Thomasville Drilling & Testing Co.
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CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

DESIGNED TO INCREASE YOUR CLIENTELE—
PIT and QUARRY'S new classified section for professional men.
Write today for rates.

WANTED

Good used 18" & 24" trough idlers, any amount.
Jaw Crushers, all sizes.
Gearmotors, 3 to 15 H.P.
Late Model Vibrating Screens.

FOR SALE

Telsmith Sand Rewasher, 28" x 12'.
Transmission Belts, all sizes.
Small Gasoline Water Pumps.
Rotary Vane Feeder Valves.
Westinghouse Flexarc Portable gas driven Welder on Pneumatics.
10" Enclosed Elevator, Belt.
8" Enclosed Bucket Elevator.
6" Enclosed Bucket Elevators (2).
SACO Speed Reducers, 4 to 60 HP (9).
Parallel Shaft Reducers, 25-150 HP (11).
Pennsylvania Hammermills, SXT-14, with 450 H.P. GE Motors (2 available).
Pioneer 15x36" Jaw, Bronze Bearing.
Dodge Lever Type Jaw Crusher 9" x 15".
Climax Jaw Crusher 10" x 20", new Jaws.
Champion Jaw Crusher 12" x 26".
Acme Jaw Crusher 14" x 26".
Acme Jaw Crusher 10" x 18".
Pebble Mills, 5' and 6' (5 available).
S-A Hammermill, Knittel Type.
Wright 8 Ton Chain Hoist.
Niagara 18" x 72" S.D. Screen.
Easton Dump Cars 24" ga. 1½ yd. (4).
15 Ton Stiffleg Derrick, 110' Boom.
Screw Conveyor & Parts, 6" to 16".
Misc. Size Large Conveyor Pulleys.
Permanent Magnetic Pulley, 24" x 26".
New 42" Belt, 351 feet.
New Idlers, 18" and 24".
Trough Idlers, antifriction. 48" & 42".
36" Trough Idlers. 5 roll type (69).

G. A. UNVERZAGT & SONS INC.
136 Colt St. Irvington 11, N. J.

SALES ENGINEER

Wanted by Crusher Manufacturer located in St. Louis. 30-35 yrs. age desirable, with experience in reduction machinery. Some customer contact and inside sales work. Such as correspondence, Etc. Excellent opportunity. Write to:

Box PQ-1062 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

SHOVELS AND DRAGLINES

To be from very large to small machines

EUCLID TRUCKS

Need all sizes — rear dump trucks

Please advise price, serial numbers, mechanical condition and other pertinent information

We pay cash for your equipment

FRANK SWABB EQUIPMENT CO., INC.
313 Hazelton Nat'l. Bank Bldg.
HAZELTON, PA.
GLadstone 5-3658

WANTED
GENERAL MANAGER

Large midwest quarry is seeking an experienced resident plant manager. Plant personnel consists of well qualified department heads under competent general supervision and engineering staff. Applicants must be experienced in all phases of crushed limestone production for metallurgical and construction purposes, personnel management, labor and public relations and purchasing. Give complete personal data, age, education, experience and references. All replies will be treated confidentially.

Box PQ-1132 c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FIELD GEOLOGIST

Carry on field investigations and geological studies for portland cement manufacturer for purpose of developing new sources of raw materials and extending knowledge of present deposits. Will headquarter in Chicago, but must be free to travel. Will consider recent graduates as well as experienced applicants. Must have degree. Give full details on experience, training, personal data, and salary desired in first letter. Reply to:

BOX PQ-9102, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

Mechanical Engineer needed by large cement company. Opportunity for training and advancement. Write, giving complete details of education, experience and salary desired. Confidential.

Box PQ-1212, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

Geologist with engineering experience by a large cement company. State education, experience and salary desired. Must be willing to travel.

Box PQ-1222, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED TO BUY
ROTARY DRYERS
ROTARY KILNS
BALL & ROD MILLS
DIESEL LOCOMOTIVES & CRANES

R. C. STANHOPE, INC.
60 E. 42nd St., New York 17, N. Y.

WANTED TO BUY

Log washer, must be in good condition, give full details in first letter.

F. RADANDT SONS
2418 S. 18th St. Manitowoc, Wis.

WANTED

1—108-tooth 3" circular pitch spur gear. Cast iron or steel. 9" or 9¼" face, 11" bore, 2¼" by ¾" keyseat. 12½" through hub.

WOODVILLE LIME PRODUCTS CO.
Woodville, Ohio • Phone: 2351

WANT CO - ADVENTURER

Well known aggregate producer owns outright, complete, all electric driven, modern, steel, 600 TPH, Sand-gravel or crushed stone plant, including excavating and hauling equipment. Available now completion of large dam project. Will consider moving to large isolated project or commercial deposit adjacent to sizeable potential aggregate market. Prefer joint venture with established local producer, but will work on contract or royalty basis. Will sell plant only as a unit.

BOX PQ-1122, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

GRANITE ROCK DEPOSITS

QUARRY STRIPPED AND READY TO OPERATE

EXCELLENT LEASES

WRITE:

BOX PQ-1232 c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED TO BUY
TRANSITE OR FIBRE PIPE

⅜" Guy Wire and 3-Bolt Clamps
Ground Rods ½" or ⅝" x 8'.

Traffic Controls Corp., Inc.
P. O. Box 5988 - Phone: Oliver 6-6633
BETHESDA, MARYLAND

FOR SALE OR RENT

1—Model P Wiley all-steel Stiffleg Derrick with 60' boom, 32' mast. Rated 30-ton @ 38' radius.

1—Model E Wiley Stiffleg Derrick with 60' boom, 30' mast. Rated 25-ton @ 38' radius.

1—American Model 530 Steel Stiffleg Derrick, 70' boom, 30' mast. Rated 10-ton @ 28' radius.

1—100 KW Ideal AC Generator, 127/220/230/400/440 Volt, 3 ph. 50 or 60 cycle, with Hercules DNX diesel engine, skid mounted. Weight 16,170#.

15 KW, 20 KW, 25 KW gas—and diesel-driven generators for rent or sale.

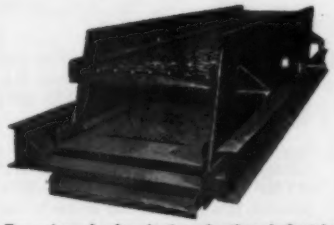
Write for New ECA Stock List No. 546

EQUIPMENT CORPORATION OF AMERICA
CLIFTON HEIGHTS, PA., Box 608P
(Sub. of Philadelphia)
GROVETON, PA., Box 43P
(Sub. of Pittsburgh)
CHICAGO 4, ILL., 327P S. La Salle St.
NEW YORK 7, N. Y., 30P Church Street

BONDED EQUIPMENT BARGAINS

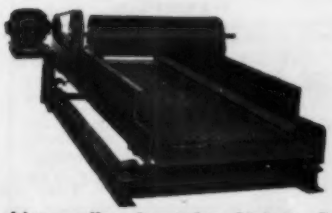
IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE

NEW BONDED® HEAVY DUTY VIBRATING SCREENS



Model Number	No. of Decks	Screening Area	Sale Price
124AS	1	2'x4'	$ 443.00
224AS	2	2'x4'	472.00
126AS	1	2'x6'	472.00
226AS	2	2'x6'	501.00
136AS	1	3'x6'	581.00
236AS	2	3'x6'	688.00
336AS	3	3'x6'	956.00
138AS	1	3'x8'	675.00
238AS	2	3'x8'	815.00
338AS	3	3'x8'	996.00
136BS	1	3'x8'	1231.00
238BS	2	3'x8'	1282.00
338BS	3	3'x8'	1375.00
248BS	2	4'x8'	1865.00
348BS	3	4'x8'	2035.00
2410BS	2	4'x10'	1953-00
3410BS	3	4'x10'	2305.00
3412BS	3	4'x12'	2635.00

NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry. HEAVY DUTY MODELS, TYPE BS: 4-bearing positive throw eccentric shaft; 3' x 8' to 5' x 14', 1 to 5 decks. GENERAL DUTY SCREENS, TYPE AS: eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for new 8-page Bulletins 1098 and 1087.

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2¼" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Conveyor Prices Include Belting

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1307	$ 722
14"	50'	2222	1144
14"	85'	3377	1733
16"	20'	1262	636
16"	45'	2137	1088
16"	60'	2662	1359
16"	90'	3712	1900
18"	25'	1477	794
18"	45'	2217	1166
18"	70'	3142	1648
18"	85'	3697	1933
18"	100'	4252	2220
18"	130'	5362	2797
20"	25'	1517	828
20"	60'	2882	1533
20"	75'	3467	1838
20"	90'	4052	2145
24"	25'	1590	898
24"	45'	2430	1330
24"	70'	3480	1875
24"	100'	4740	2514
24"	120'	5580	2950
24"	150'	6840	3603
30"	50'	2911	1617
30"	70'	3871	2119
30"	90'	4831	2614
36"	25'	1818	1118
36"	45'	2858	1678
36"	60'	3638	2096
36"	100'	5718	3214

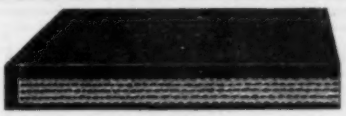
For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt	.....	$16.84 per foot
For 16" belt	.....	18-04 per foot
For 18" belt	.....	19.24 per foot
For 20" belt	.....	20.37 per foot
For 24" belt	.....	21.78 per foot
For 30" belt	.....	24.75 per foot
For 36" belt	.....	27.95 per foot

Write For Bulletin #1138

NEW CONVEYOR BELTING SAVE UP TO 28%

Heavy duty 4-ply, 28 oz. duck ⅛" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.



Width	Ply	List Price	Sale Price
14"	4	$3.52 foot	$2.75 foot
16"	4	3.96 foot	2.88 foot
18"	4	4.38 foot	3.19 foot
20"	4	4.83 foot	3.69 foot
24"	4	5.69 foot	4.14 foot
30"	4	6.97 foot	5.06 foot
36"	4	8.26 foot	6.00 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting. This belt is for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

Width	Ply	List Price	Sale Price
16"	4	$4.71 foot	$3.36 foot
18"	4	5.23 foot	3.72 foot
20"	4	5.73 foot	4.24 foot
24"	4	6.74 foot	4.80 foot
30"	4	8-28 foot	5.89 foot
24"	5	7.90 foot	5.61 foot

Other widths, plies, duck weights and cover thicknesses available at low prices. Write for Free Sample.

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE

3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7-50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well known makes. Furnished with easily replaceable pre-lubricated sealed ball bearings. Also, can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers also available from $61.00. Write For Bulletin #1138.

NEW BONDED® FEEDERS

For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may also be driven from tail shaft of Bonded® Troughing Idler Conveyors, thus eliminating the necessity of two motors. Capacities to 225 tons per hour. Full information in Bulletin 1140. Write for it. Priced from $255.00

BUILD IT YOURSELF WITH BONDED CONVEYOR PARTS & ACCESSORIES

Ready Made Head, Tail and Intermediate Conveyor Sections. All types of Idlers, Return Rolls, Belting Reducers, Accessories and Motors in Stock so you can Build Your Own Conveyor. All Bonded Troughing Idler Conveyors (described in this ad) can be equipped with any accessory described below or use them on your present conveyor or Bucket Elevator. Write for Bulletin #1139

Return Belt Guide Idler $11.75

Carry Belt Guide Idler $14.50

Head & Tail $149.00

Self-Aligning Idler $60.75

Flat Roll Idler $13.50

Holdback $98.00

YOU ARE WELCOME to Visit the Bonded Factory Any Time.

Wing Pulley $71.00

Screw Takeup and Frame $30.25

Rubber Disc Impact Idler $61.00

1 H.P. Speed Reducer $58.50

More than 5,000 Mines & Quarries Have Modernized with Bonded Equipment.

BONDED SCALE AND MACHINE COMPANY

PHONE: Hickory 4-2196, Days — WRITE FOR FREE CATALOG AND PRICES — PHONE: AX. 1-2213 Evenings

110 BELLVIEW — Mfgrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders — Columbus 7, Ohio

EQUIPMENT LOCATED
GA. - N.Y. - CALIF. - OHIO - TEXAS - ILL.

GRINDING MILLS

BALL MILLS—3'x4', 4'x8', 5'x8', 5'x8', 5'x10', 6'x5', 6'x7', 6'x8', 6'x10', 9'6"x11'.
HARDINGE MILLS—4'6"x16", 6'x14", 6'x22", 6'x36", 7'x22", 8'x36", 8'x48", 10'x48".
ROD MILLS—12"x24" LAB., 3'x10', 4'x8', 4'x9', 4'x14', 5'x8', 5'x10', 5'x14', 6'6"x14'6" & 8'6"x12'.
TUBE MILLS—5'x14', 5'x22', 5'6"x22', 6'6"x21'.

HAMMERMILLS

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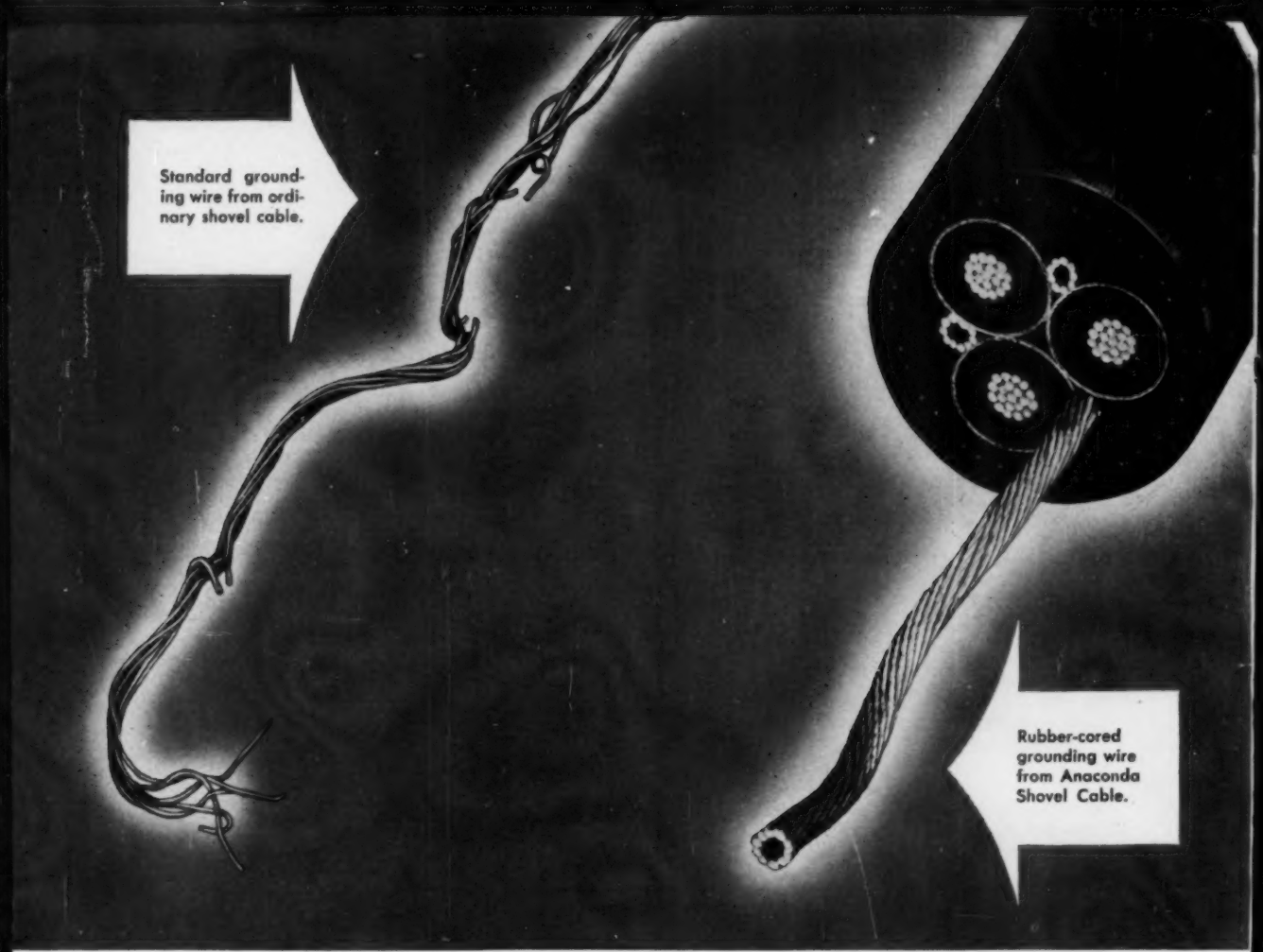
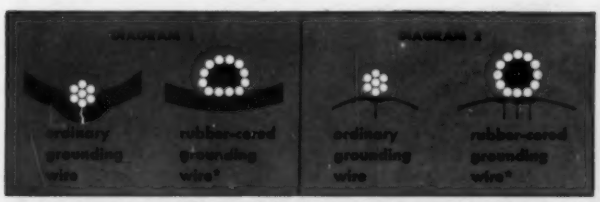


PHOTOGRAPH of grounding wires from actual cables. Note how wires in ordinary shovel cable have kinked and broken in service — while Anconda's patented rubber-cored grounding wires show no sign of damage.

Look how Anaconda's rubber-cored grounding wires

keep cable on the job and out of the shop

When shovel cable is moved in mining operations, ordinary grounding wires tend to move within the cable—to kink and break during bending, as the actual sample on the left shows.



LARGER DIAMETER of Anaconda's rubber-cored grounding wire, unlike ordinary grounding wire, will not cut insulation if cable is crushed (diagram 1). In addition, it provides broader contact with the shielding, provides a more positive ground (diagram 2).

*Patented by Anaconda

In contrast, Anaconda's patented rubber-cored wires, right, conform more readily when compressed or bent. Every wire in every strand is cushioned. No kinks or breaks occur.

Rubber-cored grounding wires also have larger diameters—this provides (1) broader contact and shielding and (2) reduces tendency of the ground wires to cut the individual wires in both the shield and the grounding wire.

The only shovel cables made with rubber-cored grounding wires are made by Anaconda. For more information, call the Man from Anaconda or see your Anaconda distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

58322

ASK YOUR ANACONDA® DISTRIBUTOR ABOUT SHOVEL CABLE

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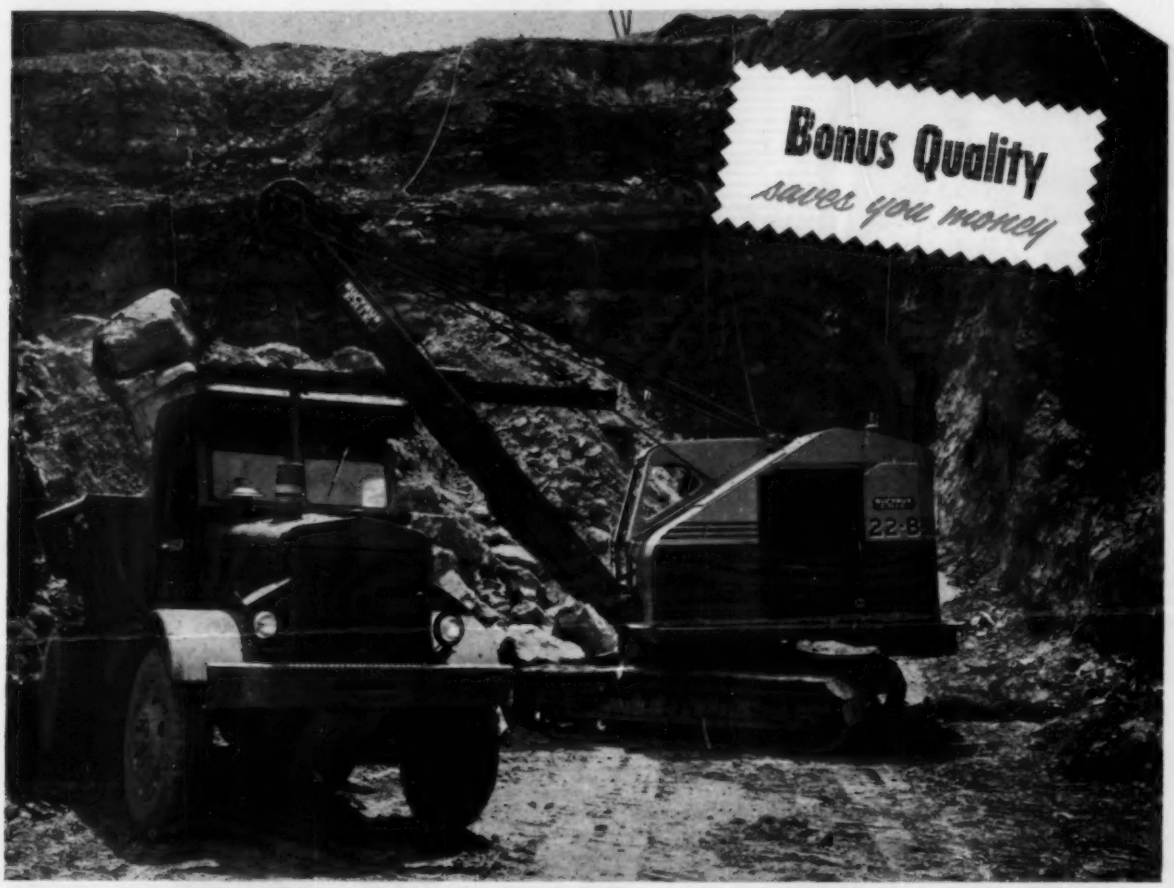


High-speed work cycles are a big reason why quarry owners like the 22-B. This one loads limestone in Iowa.

Quarry profits begin in the pit --where Bucyrus-Eries are favorites

Profitable quarry operations depend on sustained high output and low cost . . . Bucyrus-Erie excavators have a reputation for offering both.

High output comes from fast work cycles. Controls are instant-acting and respond to fingertip touch. Balance between power and speed helps operators maintain a fast, effortless pace throughout an entire shift.

Bucyrus-Erie machines not only work fast; they keep working steadily with little time out for maintenance. Special care has been taken to arrange machinery so it's easy to get at for lubrication, adjustment, and parts replacement.

Bucyrus-Eries also offer long service life—another result of engineering, research and manufacturing facilities that are unsurpassed in the industry.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

Your Bucyrus-Erie distributor will be glad to give you all the details on shovels and draglines from ⅜- to 4-cu. yd.

246E56

Bonus Quality is the result of extra care in Bucyrus-Erie manufacturing—like the carefully controlled flame-hardening of the lower path for the hook rollers by this automatic machine to insure long life and low maintenance.

Why Waste Production and Money

every time you change crusher setting?

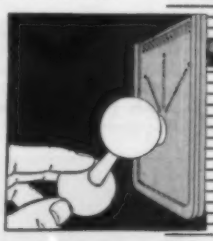
get One-Man, One-Minute PRODUCT CONTROL

FORTY-FIVE minutes — an hour — two hours — yes, even four hours — that's how long it takes to change size setting on some gyratory crushers. Translate that lost time into tonnage, the tonnage into dollars — and you can readily see the tremendous profit advantage in *one-man, one-minute product control* — available only with this truly modern *Hydrocone* crusher.

Changing crusher adjustment to precise product size is a flick of a switch operation in the *Hydrocone* crusher. Compensation for wear is equally fast—equally simple. And if the *Hydrocone* crusher stops under load, flick a switch and you're back in operation.

For complete information, see your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 07B7145B.

Hydrocone is an Allis-Chalmers trademark.



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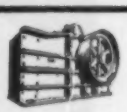
Hammermill

Vibrating Screen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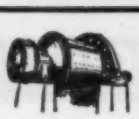
Gyratory Crushers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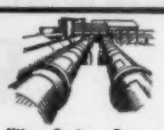

Kilns, Coolers, Dryers

Farval helps keep walking dragline working —no lost time for lubrication

FARVAL—
Studies in Centralized Lubrication
No. 168

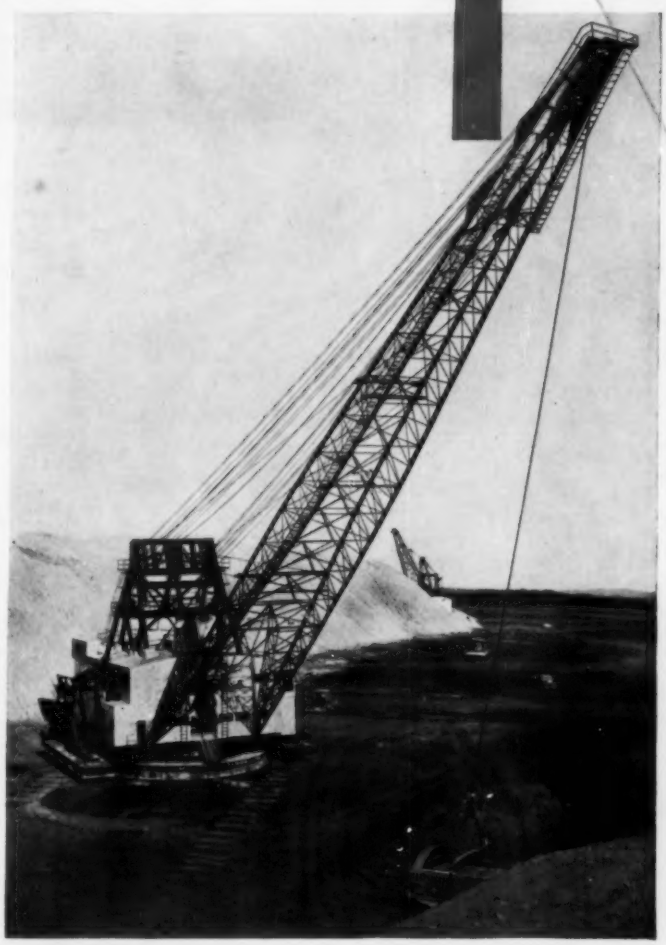
LUBRICATION requirements of this giant walking dragline are as complex as the machine itself. It was a tough problem to solve, but a planned Farval Centralized Lubrication System did it. Now, Farval helps keep the dragline working uninterruptedly with minimum time for lubrication.

The entire walking machinery needs a fresh supply of lubricant about every five steps—length of each step is 6 feet 2 inches. Hoisting, dragging and swinging machinery require lubricant on an 8-hour basis. 108 rollers in a roller circle that supports and permits rotation of the control house, require lubrication once every 24 hours. All told, 206 bearings require regular lubrication.

These varying lubrication frequencies are all handled efficiently and surely by one Farval automatic system divided into branches. Any part of the machinery can be lubricated independently of the others.

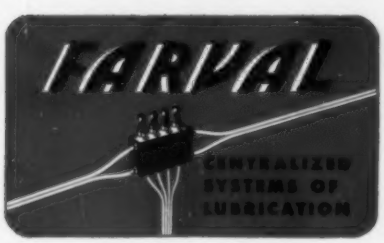
If you have an equipment lubrication problem, simple or complex, it will pay you to find out how a Farval Centralized Lubrication System can save you time, money and lubricant. Farval delivers oil or grease unfailingly, in the exact amount required when needed, to each bearing served. It can be installed on new or old equipment, often pays for itself in a few weeks or months. Thousands of Farval installations are improving lubrication and operations in practically all industries. Find out how Farval can help *you*. Write for technical advice and ask for Bulletin 26. The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.

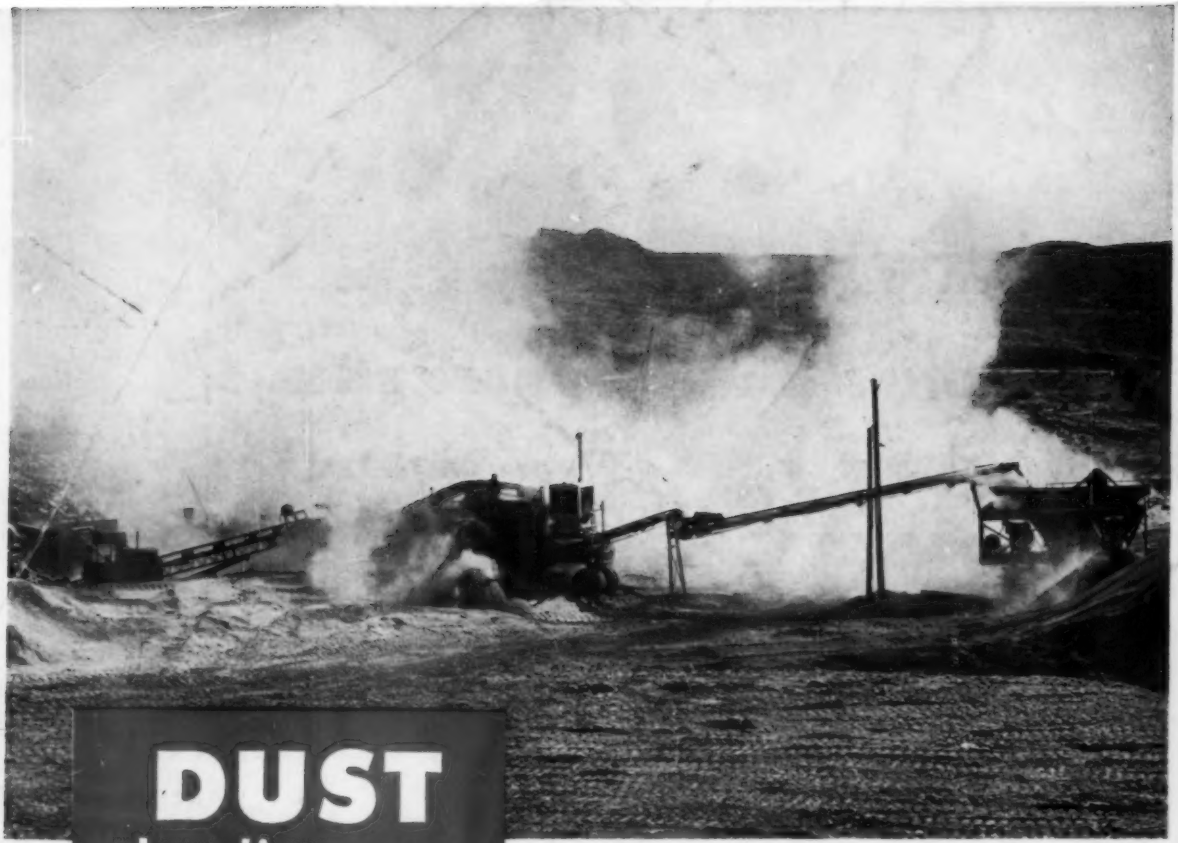
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



Farval-lubricated walking dragline, one of the largest standard production machines of its kind in the world, serving at a Texas mine.

KEYS TO ADEQUATE LUBRICATION—**Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.**





DUST clouding your efficiency?

...Here's how to beat it

USE *Texaco Marfak*, the world-famous chassis lubricant that seals out dust and dirt, seals itself in the bearings, keeps wear at a minimum. *Marfak* prevents rust, too. And the protection lasts longer, because *Marfak's* tough film stays put even under heavy shock loads. Naturally, efficiency goes up while maintenance costs drop.

Texaco Marfak Heavy Duty does the same fine job in wheel bearings – fights off dirt and moisture, assures ample protection and safer braking for thousands of extra miles. No seasonal change is needed.

To simplify chassis, wheel bearing, water pump and other grease lubrication with *just one lubricant* – use *Texaco Marfak Heavy Duty Special 2*. This lithium-base, multi-purpose grease pumps easily at low temperatures, always lubricates effectively. It resists water washout, stays stable in the toughest service.

More than 625 million pounds of Texaco Marfak have been sold

Texaco Track Roll Lubricant on rollers assures smoother operation, provides top protection against rust and wear.

Find out what made-for-the-job Texaco Lubricants can do for your operation. Get full details from a Texaco Lubrication Engineer. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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